

Technical Report for

Aquaterra Technologies, Inc.

Sun-Marcus Hook Refinery, Philadelphia, PA

AOI-5

Accutest Job Number: JB37539

Sampling Date: 05/20/13

Report to:

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Total number of pages in report: 281



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Nancy Cole
Laboratory Director

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Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV

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Test results relate only to samples analyzed.

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Sample Summary

Aquaterra Technologies, Inc.

Job No: JB37539

Sun-Marcus Hook Refinery, Philadelphia, PA
Project No: AOI-5

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JB37539-1	05/20/13	12:45 ZM	05/20/13	SO	Soil	AOI-5_MW_447_0-2'_52013
JB37539-2	05/20/13	14:00 ZM	05/20/13	SO	Soil	AOI-5_MW_447_8-10'_52013
JB37539-3	05/20/13	08:15 ZM	05/20/13	SO	Soil	AOI-5_MW_448_0-1_052013
JB37539-4	05/20/13	08:30 ZM	05/20/13	SO	Soil	AOI-5_MW_448_3-4_052013
JB37539-5	05/20/13	13:20 ZM	05/20/13	SO	Soil	AOI-5_MW_453_0-2_052013
JB37539-6	05/20/13	13:40 ZM	05/20/13	SO	Soil	AOI-5_MW_453_3-6_052013

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Aquaterra Technologies, Inc.

Job No JB37539

Site: Sun-Marcus Hook Refinery, Philadelphia, PA

Report Date 6/14/2013 10:08:13 A

On 05/20/2013, 6 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB37539 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: SO

Batch ID: V3C4392

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB37274-4RDUP, JB37274-5RMS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO

Batch ID: VE8952

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB37417-7MS, JB37417-7MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB37539-2: Dilution required due to matrix interference.
- JB37539-6: Dilution required due to matrix interference.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: M:OP33426

- The data for SW846 8270C meets quality control requirements.
- JB37539-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-5: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-6: Analysis performed at Accutest Laboratories, Marlborough, MA.

Volatiles by GC By Method SW846 8011

Matrix: SO

Batch ID: M:OP33302

- The data for SW846 8011 meets quality control requirements.
- JB37539-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-5: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-6: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-1: Analysis performed at Accutest Laboratories, Marlborough, MA.

Metals By Method SW846 6010C

Matrix: SO

Batch ID: M:MP21078

- The data for SW846 6010C meets quality control requirements.
- JB37539-2 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-4 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-6 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-3 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-1 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-5 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix: SO

Batch ID: M:GN43034

- The data for SM21 2540 B MOD. meets quality control requirements.
- JB37539-6 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-4 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-3 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-2 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-1 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37539-5 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest New Jersey

Job No JB37539

Site: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Report Date 6/13/2013 4:11:30 PM

6 Sample(s) were collected on 05/20/2013 and were received at Accutest of NJ on 05/20/2013, at Accutest of NE on 05/22/2013 properly preserved, at 2.1 Deg. C and intact. These Samples received an Accutest job number of JB37539. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: OP33426

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC21251-67MS, MC21251-67MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8011

Matrix: SO

Batch ID: OP33302

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB37539-IMS, JB37539-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix: SO

Batch ID: MP21078

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC21269-1MSD, MC21269-1PS, MC21269-1SDL, MC21269-1MS were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Lead are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity. Post spike is not within acceptable range.
- Matrix Spike Duplicate Recovery(s) for Lead are outside control limits. Spike duplicate recovery indicates possible matrix interference and/or sample nonhomogeneity.
- MP21078-PS1 for Lead: Post-digestion spike recoveries outside of control limits indicate possible matrix interference.
- MP21078-SD1 for Lead: Serial dilution indicates possible matrix interference.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix: SO

Batch ID: GN43034

- Sample(s) MC21214-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report (JB37539).

Summary of Hits

Job Number: JB37539
 Account: Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA
 Collected: 05/20/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB37539-1	AOI-5_MW_447_0-2'_52013					
Lead ^a		65.4	0.95	0.16	mg/kg	SW846 6010C
JB37539-2	AOI-5_MW_447_8-10'_52013					
Anthracene ^a		0.0732 J	0.11	0.038	mg/kg	SW846 8270C
Benzo(a)anthracene ^a		0.0508 J	0.11	0.042	mg/kg	SW846 8270C
Benzo(a)pyrene ^a		0.0286 J	0.11	0.026	mg/kg	SW846 8270C
Chrysene ^a		0.0923 J	0.11	0.045	mg/kg	SW846 8270C
Fluorene ^a		0.160	0.11	0.039	mg/kg	SW846 8270C
Phenanthrene ^a		0.346	0.11	0.033	mg/kg	SW846 8270C
Pyrene ^a		0.173	0.11	0.034	mg/kg	SW846 8270C
Lead ^a		2.8	0.87	0.15	mg/kg	SW846 6010C
JB37539-3	AOI-5_MW_448_0-1_052013					
Benzo(a)anthracene ^a		0.253 J	0.59	0.23	mg/kg	SW846 8270C
Benzo(a)pyrene ^a		0.218 J	0.59	0.14	mg/kg	SW846 8270C
Benzo(b)fluoranthene ^a		0.184 J	0.59	0.14	mg/kg	SW846 8270C
Benzo(g,h,i)perylene ^a		0.273 J	0.59	0.27	mg/kg	SW846 8270C
Chrysene ^a		0.261 J	0.59	0.24	mg/kg	SW846 8270C
Phenanthrene ^a		0.491 J	0.59	0.18	mg/kg	SW846 8270C
Pyrene ^a		0.648	0.59	0.18	mg/kg	SW846 8270C
Lead ^a		117	0.93	0.16	mg/kg	SW846 6010C
JB37539-4	AOI-5_MW_448_3-4_052013					
Lead ^a		14.8	0.99	0.17	mg/kg	SW846 6010C
JB37539-5	AOI-5_MW_453_0-2_052013					
Naphthalene ^a		0.0864 J	0.12	0.046	mg/kg	SW846 8270C
Phenanthrene ^a		0.0608 J	0.12	0.036	mg/kg	SW846 8270C
Pyrene ^a		0.0402 J	0.12	0.036	mg/kg	SW846 8270C
Lead ^a		66.7	1.0	0.17	mg/kg	SW846 6010C
JB37539-6	AOI-5_MW_453_3-6_052013					
Benzene ^b		0.0323 J	0.12	0.014	mg/kg	SW846 8260B
Ethylbenzene ^b		0.216	0.12	0.031	mg/kg	SW846 8260B
Isopropylbenzene ^b		0.153 J	0.59	0.0088	mg/kg	SW846 8260B
1,2,4-Trimethylbenzene ^b		0.104 J	0.59	0.025	mg/kg	SW846 8260B
Anthracene ^a		0.180	0.12	0.042	mg/kg	SW846 8270C
Benzo(a)anthracene ^a		0.0571 J	0.12	0.047	mg/kg	SW846 8270C

Summary of Hits

Job Number: JB37539
Account: Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA
Collected: 05/20/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Chrysene ^a		0.0781 J	0.12	0.049	mg/kg	SW846 8270C
Fluorene ^a		0.345	0.12	0.043	mg/kg	SW846 8270C
Naphthalene ^a		0.902	0.12	0.047	mg/kg	SW846 8270C
Phenanthrene ^a		0.901	0.12	0.037	mg/kg	SW846 8270C
Pyrene ^a		0.370	0.12	0.037	mg/kg	SW846 8270C
Lead ^a		33.2	0.82	0.14	mg/kg	SW846 6010C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Dilution required due to matrix interference.

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_447_0-2' _52013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-1	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	86.4
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C98892.D	1	05/24/13	JTP	n/a	n/a	V3C4392
Run #2							

Run #	Initial Weight
Run #1	5.8 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00012	mg/kg	
108-88-3	Toluene	ND	0.0010	0.00010	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	0.00026	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00023	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00013	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0050	0.000074	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0050	0.00021	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0050	0.00016	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		65-131%
17060-07-0	1,2-Dichloroethane-D4	85%		70-121%
2037-26-5	Toluene-D8	95%		80-128%
460-00-4	4-Bromofluorobenzene	100%		67-131%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_447_0-2' _52013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-1	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	86.4
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W12768.D	5	06/04/13	AMA	05/31/13	M:OP33426	M:MSW587
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.1 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.58	0.20	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.58	0.22	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.58	0.13	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.58	0.14	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.58	0.26	mg/kg	
218-01-9	Chrysene	ND	0.58	0.23	mg/kg	
86-73-7	Fluorene	ND	0.58	0.20	mg/kg	
91-20-3	Naphthalene	ND	0.58	0.22	mg/kg	
85-01-8	Phenanthrene	ND	0.58	0.17	mg/kg	
129-00-0	Pyrene	ND	0.58	0.18	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	56%		30-130%
321-60-8	2-Fluorobiphenyl	62%		30-130%
1718-51-0	Terphenyl-d14	65%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_447_0-2'_52013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-1	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	86.4
Method:	SW846 8011 SW846 8011		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BK25140.D	1	05/24/13	AMA	05/23/13	M:OP33302	M:GBK874
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.0011	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	124%		61-167%		
460-00-4	Bromofluorobenzene (S)	127%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AOI-5_MW_447_0-2' _52013	Date Sampled: 05/20/13
Lab Sample ID: JB37539-1	Date Received: 05/20/13
Matrix: SO - Soil	Percent Solids: 86.4
Project: Sun-Marcus Hook Refinery, Philadelphia, PA	

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	65.4	0.95	0.16	mg/kg	1	05/29/13	05/29/13 AMA	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15678

(2) Prep QC Batch: M:MP21078

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

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Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_447_8-10'_52013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-2	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	86.4
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	E203708.D	1	05/29/13	OTR	n/a	n/a	VE8952
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.8 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.093	0.011	mg/kg	
108-88-3	Toluene	ND	0.093	0.0098	mg/kg	
100-41-4	Ethylbenzene	ND	0.093	0.024	mg/kg	
1330-20-7	Xylene (total)	ND	0.093	0.013	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.093	0.022	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.093	0.013	mg/kg	
98-82-8	Isopropylbenzene	ND	0.46	0.0069	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.46	0.019	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.46	0.015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		65-131%
17060-07-0	1,2-Dichloroethane-D4	81%		70-121%
2037-26-5	Toluene-D8	92%		80-128%
460-00-4	4-Bromofluorobenzene	111%		67-131%

(a) Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_447_8-10'_52013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-2	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	86.4
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W12769.D	1	06/04/13	AMA	05/31/13	M:OP33426	M:MSW587
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.9 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0732	0.11	0.038	mg/kg	J
56-55-3	Benzo(a)anthracene	0.0508	0.11	0.042	mg/kg	J
50-32-8	Benzo(a)pyrene	0.0286	0.11	0.026	mg/kg	J
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.026	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.050	mg/kg	
218-01-9	Chrysene	0.0923	0.11	0.045	mg/kg	J
86-73-7	Fluorene	0.160	0.11	0.039	mg/kg	
91-20-3	Naphthalene	ND	0.11	0.043	mg/kg	
85-01-8	Phenanthrene	0.346	0.11	0.033	mg/kg	
129-00-0	Pyrene	0.173	0.11	0.034	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	52%		30-130%
321-60-8	2-Fluorobiphenyl	55%		30-130%
1718-51-0	Terphenyl-d14	58%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_447_8-10'_52013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-2	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	86.4
Method:	SW846 8011 SW846 8011		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BK25141.D	1	05/24/13	AMA	05/23/13	M:OP33302	M:GBK874
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.4 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.0011	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	123%		61-167%		
460-00-4	Bromofluorobenzene (S)	132%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AOI-5_MW_447_8-10'_52013	Date Sampled: 05/20/13
Lab Sample ID: JB37539-2	Date Received: 05/20/13
Matrix: SO - Soil	Percent Solids: 86.4
Project: Sun-Marcus Hook Refinery, Philadelphia, PA	

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	2.8	0.87	0.15	mg/kg	1	05/29/13	05/29/13 AMA	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15678

(2) Prep QC Batch: M:MP21078

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 B = Indicates a result > = MDL but < RL

4.2
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Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_448_0-1_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-3	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	82.3
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C98893.D	1	05/24/13	JTP	n/a	n/a	V3C4392
Run #2							

Run #	Initial Weight
Run #1	5.4 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0011	0.00013	mg/kg	
108-88-3	Toluene	ND	0.0011	0.00012	mg/kg	
100-41-4	Ethylbenzene	ND	0.0011	0.00030	mg/kg	
1330-20-7	Xylene (total)	ND	0.0011	0.00016	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0011	0.00026	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0011	0.00015	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0056	0.000084	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0056	0.00024	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0056	0.00018	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		65-131%
17060-07-0	1,2-Dichloroethane-D4	87%		70-121%
2037-26-5	Toluene-D8	95%		80-128%
460-00-4	4-Bromofluorobenzene	98%		67-131%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_448_0-1_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-3	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	82.3
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W12770.D	5	06/04/13	AMA	05/31/13	M:OP33426	M:MSW587
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.59	0.20	mg/kg	
56-55-3	Benzo(a)anthracene	0.253	0.59	0.23	mg/kg	J
50-32-8	Benzo(a)pyrene	0.218	0.59	0.14	mg/kg	J
205-99-2	Benzo(b)fluoranthene	0.184	0.59	0.14	mg/kg	J
191-24-2	Benzo(g,h,i)perylene	0.273	0.59	0.27	mg/kg	J
218-01-9	Chrysene	0.261	0.59	0.24	mg/kg	J
86-73-7	Fluorene	ND	0.59	0.21	mg/kg	
91-20-3	Naphthalene	ND	0.59	0.23	mg/kg	
85-01-8	Phenanthrene	0.491	0.59	0.18	mg/kg	J
129-00-0	Pyrene	0.648	0.59	0.18	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	48%		30-130%
321-60-8	2-Fluorobiphenyl	54%		30-130%
1718-51-0	Terphenyl-d14	58%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_448_0-1_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-3	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	82.3
Method:	SW846 8011 SW846 8011		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BK25142.D	1	05/24/13	AMA	05/23/13	M:OP33302	M:GBK874
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.7 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0030	0.0011	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	123%		61-167%		
460-00-4	Bromofluorobenzene (S)	139%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AOI-5_MW_448_0-1_052013	Date Sampled: 05/20/13
Lab Sample ID: JB37539-3	Date Received: 05/20/13
Matrix: SO - Soil	Percent Solids: 82.3
Project: Sun-Marcus Hook Refinery, Philadelphia, PA	

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Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	117	0.93	0.16	mg/kg	1	05/29/13	05/29/13 AMA	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15678

(2) Prep QC Batch: M:MP21078

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_448_3-4_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-4	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	80.3
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C98894.D	1	05/24/13	JTP	n/a	n/a	V3C4392
Run #2							

Run #	Initial Weight
Run #1	6.3 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.00099	0.00012	mg/kg	
108-88-3	Toluene	ND	0.00099	0.00010	mg/kg	
100-41-4	Ethylbenzene	ND	0.00099	0.00026	mg/kg	
1330-20-7	Xylene (total)	ND	0.00099	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00099	0.00023	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00099	0.00013	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0049	0.000073	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0049	0.00021	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0049	0.00016	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	93%		65-131%		
17060-07-0	1,2-Dichloroethane-D4	85%		70-121%		
2037-26-5	Toluene-D8	96%		80-128%		
460-00-4	4-Bromofluorobenzene	95%		67-131%		

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_448_3-4_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-4	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	80.3
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W12771.D	1	06/04/13	AMA	05/31/13	M:OP33426	M:MSW587
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.12	0.042	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.12	0.047	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.12	0.028	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.12	0.029	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.12	0.055	mg/kg	
218-01-9	Chrysene	ND	0.12	0.049	mg/kg	
86-73-7	Fluorene	ND	0.12	0.043	mg/kg	
91-20-3	Naphthalene	ND	0.12	0.047	mg/kg	
85-01-8	Phenanthrene	ND	0.12	0.037	mg/kg	
129-00-0	Pyrene	ND	0.12	0.037	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	60%		30-130%
321-60-8	2-Fluorobiphenyl	64%		30-130%
1718-51-0	Terphenyl-d14	69%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_448_3-4_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-4	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	80.3
Method:	SW846 8011 SW846 8011		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BK25143.D	1	05/24/13	AMA	05/23/13	M:OP33302	M:GBK874
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0031	0.0012	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	122%		61-167%		
460-00-4	Bromofluorobenzene (S)	134%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AOI-5_MW_448_3-4_052013 Lab Sample ID: JB37539-4 Matrix: SO - Soil Project: Sun-Marcus Hook Refinery, Philadelphia, PA	Date Sampled: 05/20/13 Date Received: 05/20/13 Percent Solids: 80.3
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Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	14.8	0.99	0.17	mg/kg	1	05/29/13	05/29/13 AMA	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15678

(2) Prep QC Batch: M:MP21078

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 B = Indicates a result > = MDL but < RL

4.4
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Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_453_0-2_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-5	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	80.5
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C98895.D	1	05/24/13	JTP	n/a	n/a	V3C4392
Run #2							

Run #	Initial Weight
Run #1	6.2 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00012	mg/kg	
108-88-3	Toluene	ND	0.0010	0.00011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	0.00026	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00024	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0050	0.000074	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0050	0.00021	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0050	0.00016	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		65-131%
17060-07-0	1,2-Dichloroethane-D4	84%		70-121%
2037-26-5	Toluene-D8	94%		80-128%
460-00-4	4-Bromofluorobenzene	97%		67-131%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_453_0-2_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-5	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	80.5
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W12760.D	1	06/03/13	AMA	05/31/13	M:OP33426	M:MSW587
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.8 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.12	0.041	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.12	0.046	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.12	0.028	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.12	0.028	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.12	0.054	mg/kg	
218-01-9	Chrysene	ND	0.12	0.048	mg/kg	
86-73-7	Fluorene	ND	0.12	0.042	mg/kg	
91-20-3	Naphthalene	0.0864	0.12	0.046	mg/kg	J
85-01-8	Phenanthrene	0.0608	0.12	0.036	mg/kg	J
129-00-0	Pyrene	0.0402	0.12	0.036	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	56%		30-130%
321-60-8	2-Fluorobiphenyl	65%		30-130%
1718-51-0	Terphenyl-d14	70%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_453_0-2_052013			Date Sampled:	05/20/13
Lab Sample ID:	JB37539-5			Date Received:	05/20/13
Matrix:	SO - Soil			Percent Solids:	80.5
Method:	SW846 8011 SW846 8011				
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA				

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BK25144.D	1	05/24/13	AMA	05/23/13	M:OP33302	M:GBK874
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0031	0.0012	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	135%		61-167%		
460-00-4	Bromofluorobenzene (S)	144%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AOI-5_MW_453_0-2_052013	Date Sampled: 05/20/13
Lab Sample ID: JB37539-5	Date Received: 05/20/13
Matrix: SO - Soil	Percent Solids: 80.5
Project: Sun-Marcus Hook Refinery, Philadelphia, PA	

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Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	66.7	1.0	0.17	mg/kg	1	05/29/13	05/29/13	AMA SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15678

(2) Prep QC Batch: M:MP21078

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

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Client Sample ID:	AOI-5_MW_453_3-6_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-6	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	79.4
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	E203709.D	1	05/29/13	OTR	n/a	n/a	VE8952
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.0 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0323	0.12	0.014	mg/kg	J
108-88-3	Toluene	ND	0.12	0.012	mg/kg	
100-41-4	Ethylbenzene	0.216	0.12	0.031	mg/kg	
1330-20-7	Xylene (total)	ND	0.12	0.016	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.12	0.028	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.12	0.016	mg/kg	
98-82-8	Isopropylbenzene	0.153	0.59	0.0088	mg/kg	J
95-63-6	1,2,4-Trimethylbenzene	0.104	0.59	0.025	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	ND	0.59	0.019	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		65-131%
17060-07-0	1,2-Dichloroethane-D4	82%		70-121%
2037-26-5	Toluene-D8	93%		80-128%
460-00-4	4-Bromofluorobenzene	92%		67-131%

(a) Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	AOI-5_MW_453_3-6_052013	Date Sampled:	05/20/13
Lab Sample ID:	JB37539-6	Date Received:	05/20/13
Matrix:	SO - Soil	Percent Solids:	79.4
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W12761.D	1	06/03/13	AMA	05/31/13	M:OP33426	M:MSW587
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.180	0.12	0.042	mg/kg	
56-55-3	Benzo(a)anthracene	0.0571	0.12	0.047	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.12	0.028	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.12	0.029	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.12	0.055	mg/kg	
218-01-9	Chrysene	0.0781	0.12	0.049	mg/kg	J
86-73-7	Fluorene	0.345	0.12	0.043	mg/kg	
91-20-3	Naphthalene	0.902	0.12	0.047	mg/kg	
85-01-8	Phenanthrene	0.901	0.12	0.037	mg/kg	
129-00-0	Pyrene	0.370	0.12	0.037	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	65%		30-130%
321-60-8	2-Fluorobiphenyl	72%		30-130%
1718-51-0	Terphenyl-d14	77%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	AOI-5_MW_453_3-6_052013		Date Sampled:	05/20/13
Lab Sample ID:	JB37539-6		Date Received:	05/20/13
Matrix:	SO - Soil		Percent Solids:	79.4
Method:	SW846 8011 SW846 8011			
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BK25145.D	1	05/24/13	AMA	05/23/13	M:OP33302	M:GBK874
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.4 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0031	0.0012	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	137%		61-167%		
460-00-4	Bromofluorobenzene (S)	158%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AOI-5_MW_453_3-6_052013	Date Sampled: 05/20/13
Lab Sample ID: JB37539-6	Date Received: 05/20/13
Matrix: SO - Soil	Percent Solids: 79.4
Project: Sun-Marcus Hook Refinery, Philadelphia, PA	

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	33.2	0.82	0.14	mg/kg	1	05/29/13	05/29/13 AMA	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15678

(2) Prep QC Batch: M:MP21078

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 B = Indicates a result > = MDL but < RL

4.6
4

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #	Sample Order Control #
Accutest Quote #	Accutest Job # JB 37539

Client / Reporting Information		Project Information				Requested Analysis (see TEST CODE sheet)										Matrix Codes		
Company Name AQUATERRA TECHNOLOGIES, INC.		Project Name Marcus Hook Refinery AOI-S				<div style="display: flex; flex-direction: column; align-items: center;"> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">SEE ATTACHED FOR LIST OF ANALYSES</p> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank		
Street Address 122 So. Church St.		Street		Billing Information (if different from Report to)														
City, State, Zip West Chester, PA 19382		City, State		Company Name														
Project Contact Tiffany Doer		Project #		Street Address														
Phone #, Fax #		Client Purchase Order #		City, State, Zip														
Sampler(s) Name(s) Wke Makynski Yavus Gungor		Project Manager Jim Oppenheim		Attention:														
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Val #	Date	Time	Sampled by	Matrix	# of bottles	INC	MEOH	INC3	INC4	INC5	INC6	INC7	INC8	INC9	INC10	LAB USE ONLY
1	AOI-S-MW-442-0-2-52013		5-20-13	12:45	LM	SO	5											
2	AOI-S-MW-442-810-52013		5-20-13	14:00	LM	SO	5											SUB
3	AOES-MW-448-0-1-052013		5-20-13	08:15	YG	SO	5											1453
4	AOIS-MW-448-3-4-052013		5-20-13	03:30	YG	SO	5											4087
5	AOES-MW-453-1-2-52013		5-20-13	13:20	YG	SO	5											
6	AOES-MW-453-3-6-052013		5-20-13	13:40	YG	SO	5											

Turnaround Time (Business days)	Approved By (Accutest PM): / Date:	Data Deliverable Information	Comments / Special Instructions
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other	_____	<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input checked="" type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Format <input type="checkbox"/> EDD Format <input type="checkbox"/> Other	D.I. slurry voc vials frozen storage Date: 5/21/13 Time: 13:15 Initials: CEL

Emergency & Rush T/A data available VIA Lablink				Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished By: Wke Makynski	Date Time: 5/20/13 15:45	Received By: [Signature]	1	Relinquished By: [Signature]	Date Time: 5/20/13 17:50	Received By: [Signature]	2
Relinquished by Sampler:	Date Time:	Received By:	3	Relinquished By:	Date Time:	Received By:	4
Relinquished by:	Date Time:	Received By:	5	Custody Seal #	<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved when applicable	Cooler Temp. 4.6°C

JB37539: Chain of Custody

Page 1 of 3

JB37539

SAMPLE #	MEOH VIAL	D.I. VIAL	D.I. VIAL
1	1473	7264	7265
2	1471	7269	7268
3	1477	7261	7260
4	1474	7255	7254
5	1484	7271	7270
6	1473	7262	7263
7			
8			
9			
10			
11			
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JB37539: Chain of Custody
Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB37539 **Client:** _____ **Project:** _____
Date / Time Received: 5/20/2013 **Delivery Method:** _____ **Airbill #s:** _____
Cooler Temps (Initial/Adjusted): #1: (4.6/4.6): 0

<u>Cooler Security</u>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	_____		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

5.1
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Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB37539

Sun-Marcus Hook Refinery, Philadelphia, PA
 Project No: AOI-5

5.2
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Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB37539-1 Collected: 20-MAY-13 12:45 By: ZM Received: 20-MAY-13 By: TH						
AOI-5_MW_447_0-2'_52013						
JB37539-1	SW846 8260B	24-MAY-13 00:56	JTP			V8260SL
JB37539-1	SW846 8011	24-MAY-13 21:22	AMA	23-MAY-13	AMA	V8011EDB
JB37539-1	SW846 6010C	29-MAY-13 21:13	AMA	29-MAY-13	AMA	PB
JB37539-1	SM21 2540 B MOD.	30-MAY-13	AMA			%SOL
JB37539-1	SW846 8270C	04-JUN-13 02:44	AMA	31-MAY-13	AMA	B8270SL
JB37539-2 Collected: 20-MAY-13 14:00 By: ZM Received: 20-MAY-13 By: TH						
AOI-5_MW_447_8-10'_52013						
JB37539-2	SW846 8011	24-MAY-13 21:46	AMA	23-MAY-13	AMA	V8011EDB
JB37539-2	SW846 8260B	29-MAY-13 06:25	OTR			V8260SL
JB37539-2	SW846 6010C	29-MAY-13 21:18	AMA	29-MAY-13	AMA	PB
JB37539-2	SM21 2540 B MOD.	30-MAY-13	AMA			%SOL
JB37539-2	SW846 8270C	04-JUN-13 03:08	AMA	31-MAY-13	AMA	B8270SL
JB37539-3 Collected: 20-MAY-13 08:15 By: ZM Received: 20-MAY-13 By: TH						
AOI-5_MW_448_0-1_052013						
JB37539-3	SW846 8260B	24-MAY-13 01:26	JTP			V8260SL
JB37539-3	SW846 8011	24-MAY-13 22:10	AMA	23-MAY-13	AMA	V8011EDB
JB37539-3	SW846 6010C	29-MAY-13 21:31	AMA	29-MAY-13	AMA	PB
JB37539-3	SM21 2540 B MOD.	30-MAY-13	AMA			%SOL
JB37539-3	SW846 8270C	04-JUN-13 03:33	AMA	31-MAY-13	AMA	B8270SL
JB37539-4 Collected: 20-MAY-13 08:30 By: ZM Received: 20-MAY-13 By: TH						
AOI-5_MW_448_3-4_052013						
JB37539-4	SW846 8260B	24-MAY-13 01:55	JTP			V8260SL
JB37539-4	SW846 8011	24-MAY-13 22:34	AMA	23-MAY-13	AMA	V8011EDB
JB37539-4	SW846 6010C	29-MAY-13 21:35	AMA	29-MAY-13	AMA	PB
JB37539-4	SM21 2540 B MOD.	30-MAY-13	AMA			%SOL
JB37539-4	SW846 8270C	04-JUN-13 03:57	AMA	31-MAY-13	AMA	B8270SL
JB37539-5 Collected: 20-MAY-13 13:20 By: ZM Received: 20-MAY-13 By: TH						
AOI-5_MW_453_0-2_052013						
JB37539-5	SW846 8260B	24-MAY-13 02:25	JTP			V8260SL

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB37539

Sun-Marcus Hook Refinery, Philadelphia, PA
 Project No: AOI-5

5.2
5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB37539-5	SW846 8011	24-MAY-13 22:58	AMA	23-MAY-13	AMA	V8011EDB
JB37539-5	SW846 6010C	29-MAY-13 21:40	AMA	29-MAY-13	AMA	PB
JB37539-5	SM21 2540 B MOD.	30-MAY-13	AMA			%SOL
JB37539-5	SW846 8270C	03-JUN-13 23:30	AMA	31-MAY-13	AMA	B8270SL
JB37539-6 Collected: 20-MAY-13 13:40 By: ZM Received: 20-MAY-13 By: TH						
AOI-5_MW_453_3-6_052013						
JB37539-6	SW846 8011	24-MAY-13 23:23	AMA	23-MAY-13	AMA	V8011EDB
JB37539-6	SW846 8260B	29-MAY-13 06:55	OTR			V8260SL
JB37539-6	SW846 6010C	29-MAY-13 21:44	AMA	29-MAY-13	AMA	PB
JB37539-6	SM21 2540 B MOD.	30-MAY-13	AMA			%SOL
JB37539-6	SW846 8270C	03-JUN-13 23:54	AMA	31-MAY-13	AMA	B8270SL

Accutest Internal Chain of Custody

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA
 Received: 05/20/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB37539-1.1	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-1.1	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-1.2	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-1.2	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-1.4	Secured Storage	Juntae Park	05/23/13 16:15	Retrieve from Storage
JB37539-1.4	Juntae Park	GCMS3C	05/23/13 16:15	Load on Instrument
JB37539-1.4	GCMS3C	Juntae Park	05/24/13 10:09	Unload from Instrument
JB37539-1.4	Juntae Park	Secured Storage	05/24/13 10:09	Return to Storage
JB37539-2.1	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-2.1	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-2.2	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-2.2	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-2.3	Secured Storage	Oksana Treglazova	05/24/13 14:50	Retrieve from Storage
JB37539-2.3	Oksana Treglazova	Secured Storage	05/24/13 14:50	Return to Storage
JB37539-2.3	Secured Storage	Oksana Treglazova	05/28/13 15:30	Retrieve from Storage
JB37539-2.3	Oksana Treglazova	Secured Storage	05/28/13 15:30	Return to Storage
JB37539-3.1	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-3.1	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-3.2	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-3.2	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-3.4	Secured Storage	Juntae Park	05/23/13 16:15	Retrieve from Storage
JB37539-3.4	Juntae Park	GCMS3C	05/23/13 16:15	Load on Instrument
JB37539-3.4	GCMS3C	Juntae Park	05/24/13 10:09	Unload from Instrument
JB37539-3.4	Juntae Park	Secured Storage	05/24/13 10:09	Return to Storage
JB37539-4.1	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-4.1	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-4.2	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-4.2	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-4.4	Secured Storage	Juntae Park	05/23/13 16:15	Retrieve from Storage
JB37539-4.4	Juntae Park	GCMS3C	05/23/13 16:15	Load on Instrument
JB37539-4.4	GCMS3C	Juntae Park	05/24/13 10:09	Unload from Instrument
JB37539-4.4	Juntae Park	Secured Storage	05/24/13 10:09	Return to Storage

5.3
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Accutest Internal Chain of Custody

Job Number: JB37539
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA
Received: 05/20/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB37539-5.1	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-5.1	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-5.2	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-5.2	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-5.4	Secured Storage	Juntae Park	05/23/13 16:15	Retrieve from Storage
JB37539-5.4	Juntae Park	GCMS3C	05/23/13 16:15	Load on Instrument
JB37539-5.4	GCMS3C	Juntae Park	05/24/13 10:09	Unload from Instrument
JB37539-5.4	Juntae Park	Secured Storage	05/24/13 10:09	Return to Storage
JB37539-6.1	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-6.1	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-6.2	Secured Storage	Robert Lofrano	05/21/13 14:59	Retrieve from Storage
JB37539-6.2	Robert Lofrano		05/21/13 16:31	Subcontract
JB37539-6.3	Secured Storage	Oksana Treglazova	05/24/13 14:50	Retrieve from Storage
JB37539-6.3	Oksana Treglazova	Secured Storage	05/24/13 14:50	Return to Storage
JB37539-6.3	Secured Storage	Oksana Treglazova	05/28/13 15:30	Retrieve from Storage
JB37539-6.3	Oksana Treglazova	Secured Storage	05/28/13 15:30	Return to Storage

5.3
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GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C4392-MB	3C98884.D	1	05/23/13	JTP	n/a	n/a	V3C4392

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37539-1, JB37539-3, JB37539-4, JB37539-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	89%	70-130%
17060-07-0	1,2-Dichloroethane-D4	75%	70-122%
2037-26-5	Toluene-D8	95%	81-127%
460-00-4	4-Bromofluorobenzene	97%	66-132%

Method Blank Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE8952-MB	E203694.D	1	05/28/13	OTR	n/a	n/a	VE8952

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37539-2, JB37539-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	6.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	6.8	ug/kg	
100-41-4	Ethylbenzene	ND	50	13	ug/kg	
98-82-8	Isopropylbenzene	ND	250	3.7	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	12	ug/kg	
108-88-3	Toluene	ND	50	5.3	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	250	10	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	250	8.0	ug/kg	
1330-20-7	Xylene (total)	ND	50	7.0	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	86%	65-131%
17060-07-0	1,2-Dichloroethane-D4	85%	70-121%
2037-26-5	Toluene-D8	93%	80-128%
460-00-4	4-Bromofluorobenzene	93%	67-131%

Method Blank Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C4392-MB2	3C98909.D	1	05/24/13	JTP	n/a	n/a	V3C4392

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37274-5RMS

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	93%	70-130%
17060-07-0	1,2-Dichloroethane-D4	83%	70-122%
2037-26-5	Toluene-D8	95%	81-127%
460-00-4	4-Bromofluorobenzene	98%	66-132%

Blank Spike Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C4392-BS	3C98885.D	1	05/23/13	JTP	n/a	n/a	V3C4392

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37539-1, JB37539-3, JB37539-4, JB37539-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	43.9	88	76-117
107-06-2	1,2-Dichloroethane	50	43.3	87	68-134
100-41-4	Ethylbenzene	50	43.1	86	74-119
98-82-8	Isopropylbenzene	50	44.1	88	71-119
1634-04-4	Methyl Tert Butyl Ether	100	96.8	97	72-124
108-88-3	Toluene	50	46.1	92	77-121
95-63-6	1,2,4-Trimethylbenzene	50	42.6	85	72-118
108-67-8	1,3,5-Trimethylbenzene	50	43.1	86	69-118
1330-20-7	Xylene (total)	150	131	87	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	91%	70-122%
2037-26-5	Toluene-D8	95%	81-127%
460-00-4	4-Bromofluorobenzene	92%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE8952-BS	E203695.D	1	05/28/13	OTR	n/a	n/a	VE8952

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37539-2, JB37539-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2540	102	79-121
107-06-2	1,2-Dichloroethane	2500	2160	86	73-132
100-41-4	Ethylbenzene	2500	2510	100	78-119
98-82-8	Isopropylbenzene	2500	2560	102	75-122
1634-04-4	Methyl Tert Butyl Ether	5000	4760	95	73-122
108-88-3	Toluene	2500	2500	100	78-121
95-63-6	1,2,4-Trimethylbenzene	2500	2480	99	76-121
108-67-8	1,3,5-Trimethylbenzene	2500	2590	104	74-121
1330-20-7	Xylene (total)	7500	7260	97	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	89%	65-131%
17060-07-0	1,2-Dichloroethane-D4	81%	70-121%
2037-26-5	Toluene-D8	93%	80-128%
460-00-4	4-Bromofluorobenzene	94%	67-131%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB37274-5RMS	3C98910.D	1	05/24/13	JTP	n/a	n/a	V3C4392
JB37274-5R	3C98888.D	1	05/23/13	JTP	n/a	n/a	V3C4392

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37539-1, JB37539-3, JB37539-4, JB37539-5

CAS No.	Compound	JB37274-5R ug/kg	Spike Q	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND	75	62.3	83	47-130
107-06-2	1,2-Dichloroethane	ND	75	55.0	73	46-135
100-41-4	Ethylbenzene	ND	75	60.9	81	30-139
98-82-8	Isopropylbenzene	ND	75	64.3	86	30-140
1634-04-4	Methyl Tert Butyl Ether	ND	75	56.8	76	50-127
108-88-3	Toluene	ND	75	64.1	85	38-136
95-63-6	1,2,4-Trimethylbenzene	ND	75	58.8	78	20-145
108-67-8	1,3,5-Trimethylbenzene	ND	75	61.1	81	24-142
1330-20-7	Xylene (total)	ND	225	181	80	31-140

CAS No.	Surrogate Recoveries	MS	JB37274-5R	Limits
1868-53-7	Dibromofluoromethane	90%	94%	65-131%
17060-07-0	1,2-Dichloroethane-D4	79%	84%	70-121%
2037-26-5	Toluene-D8	96%	96%	80-128%
460-00-4	4-Bromofluorobenzene	94%	97%	67-131%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB37417-7MS	E203696.D	1	05/29/13	OTR	n/a	n/a	VE8952
JB37417-7MSD	E203697.D	1	05/29/13	OTR	n/a	n/a	VE8952
JB37417-7	E203699.D	1	05/29/13	OTR	n/a	n/a	VE8952

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37539-2, JB37539-6

CAS No.	Compound	JB37417-7 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	135		3040	2980	94	3060	96	3	47-130/22
107-06-2	1,2-Dichloroethane	ND		3040	2710	89	2780	91	3	46-135/21
100-41-4	Ethylbenzene	19.1	J	3040	2710	88	2800	91	3	30-139/25
98-82-8	Isopropylbenzene	ND		3040	2550	84	2700	89	6	30-140/27
1634-04-4	Methyl Tert Butyl Ether	559		3040	3560	99	3600	100	1	50-127/21
108-88-3	Toluene	171		3040	2900	90	3030	94	4	38-136/24
95-63-6	1,2,4-Trimethylbenzene	67.9	J	3040	2780	89	2920	94	5	20-145/28
108-67-8	1,3,5-Trimethylbenzene	29.0	J	3040	2790	91	2940	96	5	24-142/28
1330-20-7	Xylene (total)	215		9120	8260	88	8580	92	4	31-140/26

CAS No.	Surrogate Recoveries	MS	MSD	JB37417-7	Limits
1868-53-7	Dibromofluoromethane	90%	90%	86%	65-131%
17060-07-0	1,2-Dichloroethane-D4	84%	82%	85%	70-121%
2037-26-5	Toluene-D8	94%	94%	93%	80-128%
460-00-4	4-Bromofluorobenzene	92%	94%	92%	67-131%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB37274-4RDUP	3C98904.D	1	05/24/13	JTP	n/a	n/a	V3C4392
JB37274-4R	3C98887.D	1	05/23/13	JTP	n/a	n/a	V3C4392

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37539-1, JB37539-3, JB37539-4, JB37539-5

CAS No.	Compound	JB37274-4R DUP		Q	RPD	Limits
		ug/kg	Q ug/kg			
71-43-2	Benzene	ND	ND		nc	20
107-06-2	1,2-Dichloroethane	ND	ND		nc	10
100-41-4	Ethylbenzene	ND	ND		nc	19
98-82-8	Isopropylbenzene	ND	ND		nc	15
1634-04-4	Methyl Tert Butyl Ether	ND	ND		nc	16
108-88-3	Toluene	ND	ND		nc	24
95-63-6	1,2,4-Trimethylbenzene	ND	ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND	ND		nc	10
1330-20-7	Xylene (total)	ND	ND		nc	24

CAS No.	Surrogate Recoveries	DUP	JB37274-4R	Limits
1868-53-7	Dibromofluoromethane	96%	95%	65-131%
17060-07-0	1,2-Dichloroethane-D4	87%	86%	70-121%
2037-26-5	Toluene-D8	95%	95%	80-128%
460-00-4	4-Bromofluorobenzene	98%	97%	67-131%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	V3C4359-BFB	Injection Date:	05/07/13
Lab File ID:	3C98231.D	Injection Time:	09:38
Instrument ID:	GCMS3C		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9537	18.0	Pass
75	30.0 - 60.0% of mass 95	24826	46.8	Pass
95	Base peak, 100% relative abundance	53021	100.0	Pass
96	5.0 - 9.0% of mass 95	3626	6.84	Pass
173	Less than 2.0% of mass 174	0	0.00 (0.00) ^a	Pass
174	50.0 - 120.0% of mass 95	45546	85.9	Pass
175	5.0 - 9.0% of mass 174	3521	6.64 (7.73) ^a	Pass
176	95.0 - 101.0% of mass 174	44570	84.1 (97.9) ^a	Pass
177	5.0 - 9.0% of mass 176	3147	5.94 (7.06) ^b	Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3C4359-IC4359	3C98232.D	05/07/13	10:08	00:30	Initial cal 5
V3C4359-IC4359	3C98233.D	05/07/13	10:38	01:00	Initial cal 2
V3C4359-IC4359	3C98234.D	05/07/13	11:07	01:29	Initial cal 1
V3C4359-IC4359	3C98235.D	05/07/13	11:37	01:59	Initial cal 0.5
V3C4359-IC4359	3C98236.D	05/07/13	12:06	02:28	Initial cal 10
V3C4359-IC4359	3C98237.D	05/07/13	12:36	02:58	Initial cal 20
V3C4359-ICC4359	3C98238.D	05/07/13	13:05	03:27	Initial cal 50
V3C4359-IC4359	3C98239.D	05/07/13	13:35	03:57	Initial cal 100
V3C4359-IC4359	3C98240.D	05/07/13	14:04	04:26	Initial cal 200
V3C4359-ICV4359	3C98243.D	05/07/13	19:06	09:28	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	V3C4392-BFB	Injection Date:	05/23/13
Lab File ID:	3C98881.D	Injection Time:	19:31
Instrument ID:	GCMS3C		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	10339	15.8	Pass
75	30.0 - 60.0% of mass 95	28920	44.2	Pass
95	Base peak, 100% relative abundance	65413	100.0	Pass
96	5.0 - 9.0% of mass 95	4425	6.76	Pass
173	Less than 2.0% of mass 174	0	0.00 (0.00) ^a	Pass
174	50.0 - 120.0% of mass 95	54285	83.0	Pass
175	5.0 - 9.0% of mass 174	4338	6.63 (7.99) ^a	Pass
176	95.0 - 101.0% of mass 174	53157	81.3 (97.9) ^a	Pass
177	5.0 - 9.0% of mass 176	3637	5.56 (6.84) ^b	Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3C4392-CC4359	3C98882.D	05/23/13	20:00	00:29	Continuing cal 50
V3C4392-MB	3C98884.D	05/23/13	21:00	01:29	Method Blank
V3C4392-BS	3C98885.D	05/23/13	21:29	01:58	Blank Spike
JB37274-4R	3C98887.D	05/23/13	22:28	02:57	(used for QC only; not part of job JB37539)
JB37274-5R	3C98888.D	05/23/13	22:58	03:27	(used for QC only; not part of job JB37539)
ZZZZZZ	3C98889.D	05/23/13	23:27	03:56	(unrelated sample)
ZZZZZZ	3C98890.D	05/23/13	23:57	04:26	(unrelated sample)
ZZZZZZ	3C98891.D	05/24/13	00:27	04:56	(unrelated sample)
JB37539-1	3C98892.D	05/24/13	00:56	05:25	AOI-5_MW_447_0-2'_52013
JB37539-3	3C98893.D	05/24/13	01:26	05:55	AOI-5_MW_448_0-1_052013
JB37539-4	3C98894.D	05/24/13	01:55	06:24	AOI-5_MW_448_3-4_052013
JB37539-5	3C98895.D	05/24/13	02:25	06:54	AOI-5_MW_453_0-2_052013
ZZZZZZ	3C98896.D	05/24/13	02:54	07:23	(unrelated sample)
ZZZZZZ	3C98897.D	05/24/13	03:24	07:53	(unrelated sample)
ZZZZZZ	3C98898.D	05/24/13	03:53	08:22	(unrelated sample)
ZZZZZZ	3C98899.D	05/24/13	04:23	08:52	(unrelated sample)
ZZZZZZ	3C98900.D	05/24/13	04:53	09:22	(unrelated sample)
ZZZZZZ	3C98901.D	05/24/13	05:22	09:51	(unrelated sample)
ZZZZZZ	3C98902.D	05/24/13	05:52	10:21	(unrelated sample)
ZZZZZZ	3C98903.D	05/24/13	06:22	10:51	(unrelated sample)
JB37274-4RDUP	3C98904.D	05/24/13	07:08	11:37	Duplicate

Instrument Performance Check (BFB)

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	V3C4393-BFB	Injection Date:	05/24/13
Lab File ID:	3C98906.D	Injection Time:	07:37
Instrument ID:	GCMS3C		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9121	16.1	Pass
75	30.0 - 60.0% of mass 95	25475	45.1	Pass
95	Base peak, 100% relative abundance	56536	100.0	Pass
96	5.0 - 9.0% of mass 95	3943	6.97	Pass
173	Less than 2.0% of mass 174	0	0.00 (0.00) ^a	Pass
174	50.0 - 120.0% of mass 95	47411	83.9	Pass
175	5.0 - 9.0% of mass 174	3491	6.17 (7.36) ^a	Pass
176	95.0 - 101.0% of mass 174	46563	82.4 (98.2) ^a	Pass
177	5.0 - 9.0% of mass 176	3088	5.46 (6.63) ^b	Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3C4393-CC4359	3C98907.D	05/24/13	08:07	00:30	Continuing cal 20
V3C4392-MB2	3C98909.D	05/24/13	09:06	01:29	Method Blank
JB37274-5RMS	3C98910.D	05/24/13	09:44	02:07	Matrix Spike
V3C4393-MB	3C98912.D	05/24/13	10:42	03:05	Method Blank
V3C4393-BS	3C98913.D	05/24/13	11:40	04:03	Blank Spike
JB37554-7	3C98915.D	05/24/13	12:39	05:02	(used for QC only; not part of job JB37539)
JB37554-8	3C98916.D	05/24/13	13:09	05:32	(used for QC only; not part of job JB37539)
ZZZZZZ	3C98917.D	05/24/13	13:38	06:01	(unrelated sample)
ZZZZZZ	3C98918.D	05/24/13	14:08	06:31	(unrelated sample)
ZZZZZZ	3C98919.D	05/24/13	14:38	07:01	(unrelated sample)
ZZZZZZ	3C98920.D	05/24/13	15:07	07:30	(unrelated sample)
ZZZZZZ	3C98921.D	05/24/13	15:37	08:00	(unrelated sample)
ZZZZZZ	3C98922.D	05/24/13	16:57	09:20	(unrelated sample)
JB37554-7MS	3C98923.D	05/24/13	17:29	09:52	Matrix Spike
JB37554-8DUP	3C98925.D	05/24/13	18:28	10:51	Duplicate
ZZZZZZ	3C98928.D	05/24/13	18:57	11:20	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VE8922-BFB	Injection Date:	05/09/13
Lab File ID:	E202991.D	Injection Time:	11:57
Instrument ID:	GCMSE		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9499	20.5	Pass
75	30.0 - 60.0% of mass 95	22810	49.1	Pass
95	Base peak, 100% relative abundance	46437	100.0	Pass
96	5.0 - 9.0% of mass 95	3207	6.91	Pass
173	Less than 2.0% of mass 174	0	0.00 (0.00) ^a	Pass
174	50.0 - 120.0% of mass 95	44813	96.5	Pass
175	5.0 - 9.0% of mass 174	3651	7.86 (8.15) ^a	Pass
176	95.0 - 101.0% of mass 174	44253	95.3 (98.8) ^a	Pass
177	5.0 - 9.0% of mass 176	2895	6.23 (6.54) ^b	Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VE8922-IC8922	E202992.D	05/09/13	12:28	00:31	Initial cal 0.5
VE8922-IC8922	E202993.D	05/09/13	12:57	01:00	Initial cal 1
VE8922-IC8922	E202994.D	05/09/13	13:27	01:30	Initial cal 2
VE8922-IC8922	E202995.D	05/09/13	13:57	02:00	Initial cal 5
VE8922-IC8922	E202996.D	05/09/13	14:28	02:31	Initial cal 10
VE8922-IC8922	E202997.D	05/09/13	14:58	03:01	Initial cal 20
VE8922-ICC8922	E202998.D	05/09/13	15:28	03:31	Initial cal 50
VE8922-IC8922	E202999.D	05/09/13	15:58	04:01	Initial cal 100
VE8922-IC8922	E203000.D	05/09/13	16:29	04:32	Initial cal 200
VE8922-ICV8922	E203003.D	05/09/13	17:59	06:02	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VE8952-BFB	Injection Date:	05/28/13
Lab File ID:	E203691.D	Injection Time:	21:57
Instrument ID:	GCMSE		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	10540	18.5	Pass
75	30.0 - 60.0% of mass 95	26738	46.8	Pass
95	Base peak, 100% relative abundance	57096	100.0	Pass
96	5.0 - 9.0% of mass 95	3910	6.85	Pass
173	Less than 2.0% of mass 174	0	0.00 (0.00) ^a	Pass
174	50.0 - 120.0% of mass 95	49658	87.0	Pass
175	5.0 - 9.0% of mass 174	3948	6.91 (7.95) ^a	Pass
176	95.0 - 101.0% of mass 174	49272	86.3 (99.2) ^a	Pass
177	5.0 - 9.0% of mass 176	3392	5.94 (6.88) ^b	Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VE8952-CC8922	E203692.D	05/28/13	22:27	00:30	Continuing cal 50
VE8952-MB	E203694.D	05/28/13	23:26	01:29	Method Blank
VE8952-BS	E203695.D	05/28/13	23:56	01:59	Blank Spike
JB37417-7MS	E203696.D	05/29/13	00:26	02:29	Matrix Spike
JB37417-7MSD	E203697.D	05/29/13	00:55	02:58	Matrix Spike Duplicate
JB37417-7	E203699.D	05/29/13	01:55	03:58	(used for QC only; not part of job JB37539)
ZZZZZZ	E203700.D	05/29/13	02:25	04:28	(unrelated sample)
ZZZZZZ	E203701.D	05/29/13	02:55	04:58	(unrelated sample)
ZZZZZZ	E203702.D	05/29/13	03:25	05:28	(unrelated sample)
ZZZZZZ	E203704.D	05/29/13	04:25	06:28	(unrelated sample)
ZZZZZZ	E203705.D	05/29/13	04:55	06:58	(unrelated sample)
ZZZZZZ	E203706.D	05/29/13	05:25	07:28	(unrelated sample)
ZZZZZZ	E203707.D	05/29/13	05:55	07:58	(unrelated sample)
JB37539-2	E203708.D	05/29/13	06:25	08:28	AOI-5_MW_447_8-10'_52013
JB37539-6	E203709.D	05/29/13	06:55	08:58	AOI-5_MW_453_3-6_052013

6.6.5
6

Volatile Internal Standard Area Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	V3C4392-CC4359	Injection Date:	05/23/13
Lab File ID:	3C98882.D	Injection Time:	20:00
Instrument ID:	GCMS3C	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	67522	7.37	204646	9.59	299329	10.51	245002	13.64	115800	15.93
Upper Limit ^a	135044	7.87	409292	10.09	598658	11.01	490004	14.14	231600	16.43
Lower Limit ^b	33761	6.87	102323	9.09	149665	10.01	122501	13.14	57900	15.43

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
V3C4392-MB	45142	7.37	199050	9.59	285577	10.51	228527	13.64	98800	15.93
V3C4392-BS	68569	7.37	198570	9.59	293636	10.51	238423	13.64	114918	15.93
JB37274-4R	60530	7.37	205157	9.59	300626	10.51	246419	13.64	109621	15.93
JB37274-5R	58255	7.36	203609	9.59	294765	10.51	241952	13.64	106441	15.93
ZZZZZZ	64224	7.36	199398	9.59	295486	10.51	241831	13.64	108940	15.93
ZZZZZZ	55356	7.37	197164	9.59	287699	10.51	231878	13.64	99981	15.93
ZZZZZZ	61000	7.37	191727	9.59	279452	10.51	228600	13.64	100868	15.93
JB37539-1	53546	7.37	195701	9.59	287075	10.51	232922	13.64	98984	15.93
JB37539-3	60343	7.37	191711	9.59	282908	10.51	229156	13.64	97751	15.93
JB37539-4	59560	7.37	197585	9.59	288352	10.51	238283	13.64	105494	15.93
JB37539-5	58086	7.37	195249	9.59	291448	10.51	235232	13.64	104603	15.93
ZZZZZZ	56341	7.37	194962	9.59	284902	10.51	233927	13.64	102031	15.93
ZZZZZZ	59987	7.36	193729	9.59	283831	10.51	231382	13.64	101779	15.93
ZZZZZZ	57701	7.36	189851	9.59	277287	10.51	224683	13.64	98193	15.93
ZZZZZZ	62011	7.37	194401	9.59	282073	10.51	231825	13.64	102314	15.93
ZZZZZZ	58889	7.37	188238	9.59	275587	10.51	225062	13.64	98860	15.93
ZZZZZZ	64336	7.37	193139	9.59	284162	10.51	233430	13.64	103400	15.93
ZZZZZZ	51078	7.37	129307	9.59	191506	10.51	158763	13.64	68657	15.93
ZZZZZZ	55676	7.37	189034	9.59	276411	10.51	226904	13.64	99815	15.93
JB37274-4RDUP	46545	7.37	190474	9.59	280331	10.51	232594	13.64	100519	15.93

- IS 1 = Tert Butyl Alcohol-D9
- IS 2 = Pentafluorobenzene
- IS 3 = 1,4-Difluorobenzene
- IS 4 = Chlorobenzene-D5
- IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.7.1

6

Volatile Internal Standard Area Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	V3C4393-CC4359	Injection Date:	05/24/13
Lab File ID:	3C98907.D	Injection Time:	08:07
Instrument ID:	GCMS3C	Method:	SW846 8260B

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	61331	7.36	181918	9.59	267299	10.51	221056	13.64	104912	15.93
Upper Limit ^a	122662	7.86	363836	10.09	534598	11.01	442112	14.14	209824	16.43
Lower Limit ^b	30666	6.86	90959	9.09	133650	10.01	110528	13.14	52456	15.43

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
V3C4392-MB2	49653	7.37	182666	9.59	268437	10.51	216864	13.64	94076	15.93
JB37274-5RMS	34129	7.37	189366	9.59	276142	10.51	222756	13.64	104315	15.93
V3C4393-MB	36947	7.37	188756	9.59	269985	10.51	214989	13.64	91192	15.93
V3C4393-BS	61171	7.37	186297	9.59	273112	10.51	223993	13.64	107322	15.93
JB37554-7	63094	7.37	190506	9.59	278162	10.51	227762	13.64	99144	15.93
JB37554-8	58993	7.37	190648	9.59	278632	10.51	227901	13.64	100092	15.93
ZZZZZZ	64897	7.37	186079	9.59	273804	10.51	223535	13.64	96990	15.93
ZZZZZZ	59954	7.37	186618	9.59	274783	10.51	224016	13.64	96509	15.93
ZZZZZZ	61736	7.36	185636	9.59	274769	10.51	222289	13.64	96244	15.93
ZZZZZZ	56183	7.37	185401	9.59	272325	10.51	219298	13.64	94435	15.93
ZZZZZZ	55868	7.37	176301	9.59	259588	10.51	207395	13.64	84681	15.93
ZZZZZZ	52211	7.36	140553	9.59	207181	10.50	177235	13.64	81414	15.93
JB37554-7MS	43140	7.36	190110	9.59	274012	10.51	220613	13.64	105338	15.93
JB37554-8DUP	63883	7.37	189910	9.59	281050	10.51	229625	13.64	101830	15.93
ZZZZZZ	58571	7.37	189853	9.59	281845	10.51	235040	13.64	113101	15.93

- IS 1 = Tert Butyl Alcohol-D9
- IS 2 = Pentafluorobenzene
- IS 3 = 1,4-Difluorobenzene
- IS 4 = Chlorobenzene-D5
- IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.7.2
6

Volatile Internal Standard Area Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VE8952-CC8922	Injection Date:	05/28/13
Lab File ID:	E203692.D	Injection Time:	22:27
Instrument ID:	GCMSE	Method:	SW846 8260B

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	111801	7.71	171869	9.91	245483	10.82	231312	14.15	126465	16.72
Upper Limit ^a	223602	8.21	343738	10.41	490966	11.32	462624	14.65	252930	17.22
Lower Limit ^b	55901	7.21	85935	9.41	122742	10.32	115656	13.65	63233	16.22

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
VE8952-MB	107173	7.72	185007	9.90	259729	10.82	238822	14.15	135712	16.72
VE8952-BS	116670	7.71	170750	9.90	246097	10.82	231457	14.15	124696	16.72
JB37417-7MS	102743	7.70	163185	9.90	236573	10.82	222986	14.14	123547	16.72
JB37417-7MSD	102951	7.70	165734	9.90	238199	10.82	226525	14.15	123159	16.72
JB37417-7	114747	7.71	186006	9.90	260560	10.82	240893	14.15	138919	16.72
ZZZZZZ	108485	7.70	184624	9.90	258607	10.82	239117	14.15	137541	16.72
ZZZZZZ	108770	7.70	182673	9.90	256773	10.82	238411	14.15	137959	16.72
ZZZZZZ	108838	7.70	182272	9.90	253469	10.82	234838	14.15	135843	16.72
ZZZZZZ	114556	7.72	185519	9.90	259323	10.82	238358	14.14	135197	16.72
ZZZZZZ	114139	7.71	176384	9.90	245291	10.82	225835	14.14	131187	16.72
ZZZZZZ	95043	7.69	171980	9.90	237241	10.82	207870	14.15	122186	16.72
ZZZZZZ	97455	7.68	173598	9.90	236502	10.82	207415	14.15	123969	16.72
JB37539-2 ^c	103991	7.72	186313	9.90	260127	10.82	220363	14.15	121350	16.72
JB37539-6 ^c	101773	7.70	188236	9.90	261361	10.82	238004	14.15	132648	16.72

- IS 1 = Tert Butyl Alcohol-D9
- IS 2 = Pentafluorobenzene
- IS 3 = 1,4-Difluorobenzene
- IS 4 = Chlorobenzene-D5
- IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
 (c) Dilution required due to matrix interference.

Volatile Surrogate Recovery Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8260B	Matrix: SO
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB37539-1	3C98892.D	94.0	85.0	95.0	100.0
JB37539-2	E203708.D	85.0	81.0	92.0	111.0
JB37539-3	3C98893.D	95.0	87.0	95.0	98.0
JB37539-4	3C98894.D	93.0	85.0	96.0	95.0
JB37539-5	3C98895.D	94.0	84.0	94.0	97.0
JB37539-6	E203709.D	86.0	82.0	93.0	92.0
JB37274-4RDUP	3C98904.D	96.0	87.0	95.0	98.0
JB37274-5RMS	3C98910.D	90.0	79.0	96.0	94.0
JB37417-7MS	E203696.D	90.0	84.0	94.0	92.0
JB37417-7MSD	E203697.D	90.0	82.0	94.0	94.0
V3C4392-BS	3C98885.D	95.0	91.0	95.0	92.0
V3C4392-MB	3C98884.D	89.0	75.0	95.0	97.0
VE8952-BS	E203695.D	89.0	81.0	93.0	94.0
VE8952-MB	E203694.D	86.0	85.0	93.0	93.0
V3C4392-MB2	3C98909.D	93.0	83.0	95.0	98.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	65-131%
S2 = 1,2-Dichloroethane-D4	70-121%
S3 = Toluene-D8	80-128%
S4 = 4-Bromofluorobenzene	67-131%

Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4359-ICC4359
 Lab FileID: 3C98238.D

Response Factor Report MS3C

Method : C:\MSDCHEM\1\METHODS\M3C4359.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Mon May 13 17:58:56 2013
 Response via : Initial Calibration

Calibration Files

5 =3C98232.D 10 =3C98236.D 0.5 =3C98235.D 50 =3C98238.D
 100 =3C98239.D 1 =3C98234.D 200 =3C98240.D 20 =3C98237.D
 2 =3C98233.D =

Compound	5	10	0.5	50	100	1	200	20	2	Avg	%RSD
1) I Tert Butyl Alcohol-d9	-----ISTD-----										
2) 1,4-dioxane	0.110	0.132		0.133	0.123		0.134	0.132		0.127	7.27
3) tertiary butyl alcohol	1.946	2.238		2.089	1.958	2.207	2.006	2.229	1.715	2.048	8.79
4) Ethanol										0.000	-1.00
5) I pentafluorobenzene	-----ISTD-----										
6) chlorodifluoromethane	0.517	0.534		0.513	0.504	0.540	0.520	0.508	0.518	0.519	2.37
7) dichlorodifluoromethane	0.753	0.775		0.742	0.734	0.742	0.740	0.765	0.643	0.737	5.51
8) chloromethane	0.731	0.725		0.692	0.682	0.878	0.688	0.726	0.733	0.732	8.56
9) vinyl chloride	0.826	0.839	0.994	0.821	0.821	0.955	0.840	0.859	0.845	0.866	7.28
10) bromomethane	0.403	0.418	0.456	0.394	0.393	0.463	0.395	0.409	0.391	0.414	6.67
11) chloroethane	0.384	0.406	0.431	0.385	0.380	0.461	0.380	0.401	0.388	0.402	6.89
12) Vinyl Bromide	0.374	0.410		0.397		0.404		0.400	0.416	0.400	3.61
13) Pentane	0.975	0.971		0.896		0.948		0.886	0.975	0.942	4.31
14) trichlorofluoromethane	0.834	0.864	0.909	0.821	0.806	0.862	0.817	0.854	0.771	0.837	4.78
15) ethyl ether	0.281	0.277		0.257	0.254		0.251	0.262	0.282	0.266	5.01
16) acrolein	0.067	0.066		0.069		0.066		0.066	0.071	0.067	3.10
17) 1,1-dichloroethene	0.469	0.449		0.440	0.434	0.587	0.444	0.434	0.449	0.463	11.09
18) acetone		0.026		0.030	0.028		0.027	0.030		0.028	5.75
19) allyl chloride	0.297	0.312	0.220	0.294	0.291	0.309	0.299	0.283	0.277	0.287	9.57
20) acetonitrile	0.028	0.030		0.033	0.032		0.031	0.030	0.041	0.032	12.53
21) iodomethane	0.753	0.775	0.628	0.761	0.760	0.823	0.774	0.742	0.687	0.745	7.55
22) iso-butyl alcohol	0.014	0.013		0.013	0.014		0.012	0.013		0.013	4.57
23) carbon disulfide											

Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4359-ICC4359
 Lab FileID: 3C98238.D

	1.632	1.654	1.425	1.603	1.589	1.775	1.625	1.569	1.523	1.599	5.96
24)	methylene chloride										
	0.536	0.522		0.478	0.472		0.473	0.484	0.561	0.504	7.11
25)	methyl acetate										
	0.045	0.053		0.058	0.059		0.056	0.055		0.054	8.98
26)	methyl tert butyl ether										
	1.145	1.127	1.179	1.118	1.118	1.213	1.081	1.076	1.098	1.128	3.97
27)	trans-1,2-dichloroethene										
	0.532	0.528	0.484	0.499	0.491	0.662	0.500	0.485	0.513	0.522	10.63
28)	di-isopropyl ether										
	1.668	1.789	1.690	1.739	1.722	1.686	1.716	1.748	1.643	1.711	2.61
29)	ethyl tert-butyl ether										
	1.301	1.357	1.304	1.315	1.285	1.210	1.262	1.312	1.234	1.287	3.51
30)	2-butanone										
	0.035	0.039		0.042	0.043		0.040	0.038		0.040	7.87
31)	1,1-dichloroethane										
	0.907	0.932	0.840	0.894	0.882	0.995	0.892	0.867	0.843	0.895	5.34
32)	chloroprene										
	0.748	0.808	0.563	0.787	0.760	0.725	0.774	0.781	0.761	0.745	9.71
33)	acrylonitrile										
	0.116	0.117		0.122	0.124	0.106	0.117	0.116	0.090	0.114	9.46
34)	vinyl acetate										
	0.065	0.074		0.079	0.082		0.079	0.074		0.076	7.81
35)	ethyl acetate										
	0.050	0.049		0.051	0.053		0.048	0.048		0.050	3.52
36)	2,2-dichloropropane										
	0.783	0.773	0.708	0.731	0.707	0.859	0.716	0.713	0.719	0.745	6.84
37)	cis-1,2-dichloroethene										
	0.550	0.554	0.569	0.530	0.524	0.676	0.533	0.527	0.547	0.557	8.49
38)	propionitrile										
	0.046	0.046		0.048	0.049	0.041	0.046	0.045	0.040	0.045	6.74
39)	Methyl Acrylate										
	0.040	0.046		0.053	0.054		0.051	0.046		0.048	10.99
40)	bromochloromethane										
	0.219	0.225	0.185	0.226	0.223	0.217	0.225	0.220	0.212	0.217	5.87
41)	tetrahydrofuran										
	0.147	0.130		0.129	0.129		0.118	0.127	0.165	0.135	11.59
42)	chloroform										
	0.804	0.859	0.879	0.830	0.821	0.960	0.827	0.813	0.826	0.846	5.71
43)	tert-Butyl Formate										
	0.304	0.314		0.320	0.320		0.307	0.318	0.314	0.314	1.98
44)	dibromofluoromethane (s)										
	0.409	0.410	0.518	0.425	0.418	0.431	0.433	0.426	0.463	0.437	7.85
45)	1,2-dichloroethane-d4 (s)										
	0.440	0.428	0.445	0.437	0.432	0.452	0.427	0.426	0.475	0.440	3.57
46)	freon 113										
	0.339	0.384		0.373	0.359		0.366	0.368	0.332	0.360	5.20
47)	methacrylonitrile										
	0.209	0.209		0.216	0.217		0.205	0.204	0.211	0.210	2.34
48)	1,1,1-trichloroethane										
	0.765	0.785	0.636	0.759	0.745	0.814	0.760	0.740	0.724	0.748	6.59
49)	Cyclohexane										
	0.822	0.821	0.747	0.807	0.792	0.912	0.811	0.786	0.764	0.807	5.83
50)	Tert Amyl Alcohol										
	0.047	0.047		0.052	0.053		0.050	0.048	0.041	0.048	8.25
51)	2,2,4-trimethylpentane										
	2.019	2.114		2.009	1.933		1.986	1.987	2.404	2.065	7.72
52)	tert-amyl methyl ether										
	1.185	1.213	1.379	1.138	1.142	1.240	1.108	1.172	1.160	1.193	6.74

6.9.1
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Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4359-ICC4359
 Lab FileID: 3C98238.D

53)	I	1,4-difluorobenzene	-----ISTD-----									
54)		epichlorohydrin	0.022	0.024	0.025	0.025	0.023	0.023	0.023	0.024	4.39	
55)		n-butyl alcohol	0.007	0.007	0.008	0.009	0.007	0.008	0.008	0.007	9.58	
56)		carbon tetrachloride	0.482	0.491	0.403	0.476	0.462	0.523	0.474	0.462	7.22	
57)		1,1-dichloropropene	0.494	0.513	0.427	0.498	0.476	0.543	0.491	0.481	6.39	
58)		hexane	0.577	0.568	0.505	0.472	0.477	0.508	0.670	0.539	13.12	
59)		benzene	1.487	1.505	1.483	1.454	1.405	1.744	1.438	1.411	7.02	
60)		heptane	0.311	0.319	0.228	0.309	0.311	0.325	0.326	0.304	9.73	
61)		isopropyl acetate	0.491	0.517	0.542	0.555	0.481	0.524	0.522	0.439	7.29	
62)		1,2-dichloroethane	0.383	0.385	0.294	0.384	0.375	0.416	0.370	0.376	9.12	
63)		trichloroethene	0.353	0.360	0.315	0.352	0.341	0.397	0.351	0.333	7.03	
64)		ethyl acrylate	0.301	0.317	0.343	0.341	0.324	0.329	0.311	0.334	4.52	
65)		Tert-Amyl ethyl ether	0.468	0.480	0.460	0.440	0.433	0.463	0.441	0.455	3.79	
66)		2-nitropropane	0.089	0.090	0.087	0.085	0.079	0.082	0.099	0.087	7.40	
67)		2-chloroethyl vinyl ether	0.112	0.119	0.113	0.127	0.126	0.109	0.125	0.122	6.02	
68)		methyl methacrylate	0.057	0.066	0.073	0.074	0.071	0.066	0.050	0.065	13.55	
69)		1,2-dichloropropane	0.345	0.356	0.356	0.348	0.375	0.356	0.345	0.334	3.42	
70)		methylcyclohexane	0.633	0.685	0.511	0.642	0.616	0.667	0.632	0.646	7.78	
71)		dibromomethane	0.162	0.164	0.145	0.163	0.162	0.178	0.160	0.157	6.19	
72)		bromodichloromethane	0.409	0.417	0.351	0.425	0.418	0.469	0.426	0.408	8.04	
73)		cis-1,3-dichloropropene	0.528	0.537	0.505	0.537	0.525	0.575	0.532	0.517	4.58	
74)		toluene-d8 (s)	1.209	1.175	1.221	1.184	1.422	1.238	1.222	1.317	6.58	
75)		4-methyl-2-pentanone	0.096	0.098	0.099	0.103	0.096	0.093	0.086	0.096	5.72	
76)		toluene	0.867	0.891	0.765	0.870	0.849	0.994	0.877	0.845	7.27	
77)		3-methyl-1-butanol	0.007	0.007	0.008	0.008	0.007	0.008	0.007	0.006	11.35	
78)		trans-1,3-dichloropropene	0.443	0.445	0.359	0.450	0.441	0.507	0.440	0.428	8.91	
79)		ethyl methacrylate	0.334	0.348	0.270	0.360	0.364	0.351	0.354	0.342	9.38	
80)		1,1,2-trichloroethane	0.198	0.204	0.174	0.202	0.197	0.213	0.194	0.190	6.25	
81)		2-hexanone	0.077	0.081	0.088	0.089	0.085	0.080	0.070	0.081	8.18	
82)	I	chlorobenzene-d5	-----ISTD-----									
83)		tetrachloroethene										

6.9.1

6

Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4359-ICC4359
 Lab FileID: 3C98238.D

84)	1,3-dichloropropane	0.495	0.500	0.424	0.506	0.497	0.533	0.515	0.484	0.458	0.490	6.58
85)	butyl acetate	0.540	0.544	0.462	0.544	0.537	0.593	0.529	0.520	0.496	0.529	6.83
86)	dibromochloromethane	0.207	0.208		0.223	0.228	0.211	0.215	0.217	0.194	0.213	4.94
87)	1,2-dibromoethane	0.357	0.364	0.355	0.375	0.378	0.381	0.378	0.348	0.312	0.361	6.01
88)	3,3-Dimethyl-1-Butanol	0.291	0.291	0.241	0.299	0.297	0.304	0.287	0.284	0.260	0.284	7.13
89)	chlorobenzene	0.032	0.030	0.029	0.035	0.036	0.030	0.034	0.032	0.030	0.032	8.05
90)	1,1,1,2-tetrachloroethane	1.144	1.186	1.003	1.160	1.131	1.309	1.151	1.126	1.071	1.142	7.25
91)	ethylbenzene	0.414	0.421	0.367	0.430	0.427	0.456	0.435	0.413	0.378	0.416	6.65
92)	m,p-xylene	2.071	2.086	1.945	2.056	2.010	2.313	2.057	2.013	1.967	2.058	5.19
93)	o-xylene	0.799	0.801	0.720	0.797	0.776	0.857	0.801	0.764	0.753	0.785	4.89
94)	styrene	0.779	0.776	0.655	0.781	0.767	0.876	0.789	0.748	0.756	0.770	7.38
95)	BUTYL ACRYLATE	1.201	1.236	1.186	1.272	1.257	1.404	1.294	1.219	1.152	1.247	5.92
96)	bromoform	0.596	0.627		0.673		0.663		0.627	0.686	0.645	5.31
		0.215	0.224		0.238	0.244	0.222	0.241	0.220	0.201	0.226	6.51
97)	I 1,4-dichlorobenzene-d	-----ISTD-----										
98)	isopropylbenzene	4.322	4.379	3.876	4.149	4.056	4.793	4.089	4.124	3.986	4.197	6.47
99)	4-bromofluorobenzene (s)	1.282	1.124		1.085	1.051		1.077	1.109		1.121	7.39
100)	bromobenzene	0.966	1.007	0.912	0.946	0.936	1.079	0.936	0.949	0.913	0.960	5.51
101)	cyclohexanone	0.050	0.043		0.048	0.039		0.036	0.040	0.043	0.043	11.05
102)	1,1,1,2-tetrachloroethane	0.799	0.777	0.781	0.773	0.770	0.842	0.726	0.739	0.722	0.770	4.89
103)	trans-1,4-dichloro-2-butene	0.211	0.201		0.205	0.204	0.237	0.194	0.192	0.224	0.209	7.31
104)	1,2,3-trichloropropane	0.222	0.210		0.208	0.207	0.166	0.194	0.199	0.209	0.202	8.27
105)	n-propylbenzene	4.963	4.937	4.645	4.727	4.566	5.577	4.598	4.684	4.610	4.812	6.66
106)	4-Ethyltoluene	3.896	4.170	4.616	3.977	3.856	4.094	3.914	3.992	4.002	4.057	5.70
107)	2-chlorotoluene	0.986	1.007	0.908	0.963	0.942	1.174	0.968	0.944	0.925	0.980	8.04
108)	4-chlorotoluene	1.015	0.982	0.989	0.967	0.934	1.102	0.963	0.933	0.985	0.986	5.17
109)	1,3,5-trimethylbenzene	3.566	3.574	3.538	3.402	3.353	4.062	3.431	3.391	3.317	3.515	6.42
110)	tert-butylbenzene	3.130	3.220	2.893	3.018	2.954	3.496	3.052	2.942	2.849	3.061	6.53
111)	pentachloroethane	0.632	0.646	0.629	0.625	0.631	0.649	0.636	0.607	0.553	0.623	4.66
112)	1,2,4-trimethylbenzene	3.555	3.494	3.508	3.410	3.320	3.975	3.382	3.346	3.357	3.483	5.79
113)	sec-butylbenzene											

6.9.1
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Initial Calibration Summary

Job Number: JB37539
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4359-ICC4359
Lab FileID: 3C98238.D

114)	1,3-dichlorobenzene	4.623	4.652	4.380	4.483	4.381	5.244	4.455	4.390	4.276	4.543	6.36
115)	p-isopropyltoluene	1.887	1.881	1.709	1.828	1.789	2.102	1.826	1.813	1.804	1.849	5.86
116)	1,4-dichlorobenzene	3.845	3.846	3.743	3.687	3.617	4.356	3.705	3.580	3.558	3.771	6.43
117)	1,2-dichlorobenzene	1.839	1.899	1.860	1.818	1.797	2.293	1.834	1.788	1.860	1.888	8.25
118)	1,4-Diethylbenzene	1.736	1.743	1.757	1.702	1.699	2.025	1.699	1.683	1.640	1.743	6.40
119)	n-butylbenzene	2.076	2.333	2.709	2.264	2.219	2.361	2.303	2.280	2.255	2.311	7.36
120)	1,2,4,5-Tetramethylbenzene	1.965	2.016	1.755	1.945	1.890	2.351	1.966	1.893	1.904	1.965	8.26
121)	1,2-dibromo-3-chloropropane	3.428	3.756	3.995	3.675	3.534	3.709	3.470	3.622	3.711	3.655	4.68
122)	1,3,5-Trichlorobenzene	0.147	0.139		0.132	0.136		0.119	0.132	0.158	0.138	9.10
123)	1,2,4-trichlorobenzene	1.463	1.498	1.435	1.476	1.416	1.730	1.353	1.416	1.433	1.469	7.23
124)	hexachlorobutadiene	1.144	1.148	1.048	1.200	1.152	1.320	1.056	1.122	1.060	1.139	7.52
125)	naphthalene	0.831	0.837	0.797	0.794	0.761	1.006	0.711	0.810	0.786	0.815	9.93
126)	1,2,3-trichlorobenzene	2.008	2.014	2.413	2.208	2.155	2.362	1.853	2.016	1.972	2.111	8.86
127)	hexachloroethane	1.014	0.982	0.991	1.041	0.980	1.095	0.850	0.996	0.957	0.990	6.67
128)	Benzyl chloride	0.764	0.730	0.763	0.715	0.699	0.783	0.708	0.693	0.699	0.728	4.61
		1.562	1.485	1.729	1.503	1.503	1.668	1.445	1.485	1.535	1.546	6.06

(#) = Out of Range ### Number of calibration levels exceeded format ###

M3C4359.M

Mon May 13 18:10:51 2013

MS3C

6.9.1
6

Initial Calibration Verification

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4359-ICV4359
 Lab FileID: 3C98243.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\3C98243.D Vial: 13
 Acq On : 7 May 2013 7:06 pm Operator: juntaep
 Sample : icv4359-50 Inst : MS3C
 Misc : MS47462,V3C4359,5.0,,,,1 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3C4359.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Mon May 13 17:58:56 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 150%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I Tert Butyl Alcohol-d9	1.000	1.000	0.0	107	0.00	7.37
2 1,4-dioxane	0.127	0.133	-4.7	107	0.00	11.24
3 tertiary butyl alcohol	2.048	2.279	-11.3	117	0.00	7.49
4 Ethanol			-----NA-----			
5 I pentafluorobenzene	1.000	1.000	0.0	105	0.00	9.59
6 chlorodifluoromethane	0.519	0.611	-17.7	125	0.00	3.98
7 dichlorodifluoromethane	0.737	0.717	2.7	101	0.00	3.96
8 chloromethane	0.732	0.665	9.2	101	0.00	4.32
9 vinyl chloride	0.866	0.801	7.5	102	0.00	4.57
10 bromomethane	0.414	0.386	6.8	103	0.00	5.23
11 chloroethane	0.402	0.375	6.7	102	0.00	5.41
12 Vinyl Bromide	0.400	0.390	2.5	103	0.00	5.76
13 Pentane	0.942	0.894	5.1	105	0.00	5.94
14 trichlorofluoromethane	0.837	0.799	4.5	102	0.01	5.85
15 ethyl ether	0.266	0.255	4.1	104	0.00	6.27
16 acrolein	0.067	0.070	-4.5	107	0.00	6.53
17 1,1-dichloroethene	0.463	0.439	5.2	104	0.00	6.70
18 acetone	0.028	0.032	-14.3	114	-0.01	6.75
19 allyl chloride	0.287	0.297	-3.5	106	0.00	7.23
20 acetonitrile	0.032	0.032	0.0	104	0.00	7.20
21 iodomethane	0.745	0.750	-0.7	103	0.00	6.98
22 iso-butyl alcohol	0.013	0.013	0.0	103	0.00	9.88
23 carbon disulfide	1.599	1.599	0.0	105	0.00	7.10
24 methylene chloride	0.504	0.477	5.4	104	0.00	7.42
25 methyl acetate	0.054	0.059	-9.3	106	0.00	7.21
26 methyl tert butyl ether	1.128	1.131	-0.3	106	0.00	7.74
27 trans-1,2-dichloroethene	0.522	0.490	6.1	103	0.00	7.79
28 di-isopropyl ether	1.711	1.803	-5.4	109	0.00	8.32
29 ethyl tert-butyl ether	1.287	1.353	-5.1	108	0.00	8.78
30 2-butanone	0.040	0.043	-7.5	106	0.00	9.06
31 1,1-dichloroethane	0.895	0.884	1.2	104	0.00	8.35
32 chloroprene	0.745	0.811	-8.9	108	0.00	8.46
33 acrylonitrile	0.114	0.125	-9.6	107	0.00	7.75
34 vinyl acetate	0.076	0.077	-1.3	101	0.00	8.33
35 ethyl acetate	0.050	0.052	-4.0	107	0.00	9.07
36 2,2-dichloropropane	0.745	0.743	0.3	106	0.00	9.09
37 cis-1,2-dichloroethene	0.557	0.527	5.4	104	0.00	9.09
38 propionitrile	0.045	0.047	-4.4	104	0.00	9.16
39 Methyl Acrylate	0.048	0.051	-6.2	101	0.00	9.14
40 bromochloromethane	0.217	0.220	-1.4	102	0.00	9.40
41 tetrahydrofuran	0.135	0.130	3.7	105	0.00	9.44

Initial Calibration Verification

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4359-ICV4359
 Lab FileID: 3C98243.D

42	chloroform	0.846	0.812	4.0	102	0.00	9.46
43	tert-Butyl Formate	0.314	0.340	-8.3	112	0.00	9.48
44 S	dibromofluoromethane (s)	0.437	0.440	-0.7	108	0.00	9.66
45 S	1,2-dichloroethane-d4 (s)	0.440	0.451	-2.5	108	0.00	10.08
46	freon 113	0.360	0.367	-1.9	103	0.00	6.66
47	methacrylonitrile	0.210	0.211	-0.5	102	0.00	9.34
48	1,1,1-trichloroethane	0.748	0.749	-0.1	103	0.00	9.71
49	Cyclohexane	0.807	0.797	1.2	104	0.00	9.78
50	Tert Amyl Alcohol	0.048	0.049	-2.1	99	0.00	10.01
51	2,2,4-trimethylpentane	2.065	2.074	-0.4	108	0.00	10.13
52	tert-amyl methyl ether	1.193	1.215	-1.8	112	0.00	10.16
53 I	1,4-difluorobenzene	1.000	1.000	0.0	105	0.00	10.52
54	epichlorohydrin	0.024	0.027	-12.5	113	0.00	11.77
55	n-butyl alcohol	0.008	0.009	-12.5	107	0.00	10.64
56	carbon tetrachloride	0.468	0.466	0.4	102	0.00	9.91
57	1,1-dichloropropene	0.489	0.489	0.0	103	0.00	9.88
58	hexane	0.539	0.604	-12.1	125	0.00	8.08
59	benzene	1.483	1.420	4.2	102	0.00	10.15
60	heptane	0.304	0.309	-1.6	104	0.00	10.31
61	isopropyl acetate	0.509	0.579	-13.8	112	0.00	10.06
62	1,2-dichloroethane	0.370	0.369	0.3	101	0.00	10.16
63	trichloroethene	0.347	0.342	1.4	102	0.00	10.86
64	ethyl acrylate	0.325	0.339	-4.3	103	0.00	10.85
65	Tert-Amyl ethyl ether	0.455	0.471	-2.6	107	0.00	11.01
66	2-nitropropane	0.087	0.086	1.1	104	0.00	11.63
67	2-chloroethyl vinyl ether	0.118	0.136	-15.3	111	0.00	11.64
68	methyl methacrylate	0.065	0.071	-9.2	102	0.00	11.12
69	1,2-dichloropropane	0.352	0.349	0.9	103	0.00	11.13
70	methylcyclohexane	0.629	0.718	-14.1	117	0.00	11.07
71	dibromomethane	0.160	0.161	-0.6	103	0.00	11.29
72	bromodichloromethane	0.411	0.416	-1.2	102	0.00	11.41
73	cis-1,3-dichloropropene	0.527	0.532	-0.9	104	0.00	11.86
74 S	toluene-d8 (s)	1.249	1.266	-1.4	108	0.00	12.15
75	4-methyl-2-pentanone	0.096	0.101	-5.2	107	0.00	11.95
76	toluene	0.863	0.862	0.1	104	0.00	12.22
77	3-methyl-1-butanol	0.007	0.008	-14.3	107	0.00	11.97
78	trans-1,3-dichloropropene	0.436	0.446	-2.3	104	0.00	12.41
79	ethyl methacrylate	0.336	0.359	-6.8	104	0.00	12.40
80	1,1,2-trichloroethane	0.195	0.201	-3.1	104	0.00	12.63
81	2-hexanone	0.081	0.089	-9.9	106	0.00	12.79
82 I	chlorobenzene-d5	1.000	1.000	0.0	105	0.00	13.64
83	tetrachloroethene	0.490	0.495	-1.0	103	0.00	12.80
84	1,3-dichloropropane	0.529	0.532	-0.6	102	0.00	12.81
85	butyl acetate	0.213	0.220	-3.3	103	0.00	12.86
86	dibromochloromethane	0.361	0.365	-1.1	102	0.00	13.07
87	1,2-dibromoethane	0.284	0.291	-2.5	102	0.00	13.22
88	3,3-Dimethyl-1-Butanol	0.032	0.034	-6.3	103	0.00	12.96
89	chlorobenzene	1.142	1.131	1.0	102	0.00	13.67
90	1,1,1,2-tetrachloroethane	0.416	0.425	-2.2	104	0.00	13.73
91	ethylbenzene	2.058	2.038	1.0	104	0.00	13.72
92	m,p-xylene	0.785	0.782	0.4	103	0.00	13.83
93	o-xylene	0.770	0.769	0.1	103	0.00	14.24
94	styrene	1.247	1.246	0.1	103	0.00	14.25
95	BUTYL ACRYLATE	0.645	0.662	-2.6	103	0.00	14.06
96	bromoform	0.226	0.237	-4.9	105	0.00	14.52
97 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	105	0.00	15.93
98	isopropylbenzene	4.197	4.102	2.3	104	0.00	14.57

Initial Calibration Verification

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Sample: V3C4359-ICV4359
 Lab FileID: 3C98243.D

99 S	4-bromofluorobenzene (s)	1.121	1.140	-1.7	111	0.00	14.78
100	bromobenzene	0.960	0.929	3.2	103	0.00	14.98
101	cyclohexanone	0.043	0.096	-123.3#	212#	0.00	14.75
102	1,1,2,2-tetrachloroethane	0.770	0.760	1.3	103	0.00	14.88
103	trans-1,4-dichloro-2-bute	0.209	0.203	2.9	104	0.00	14.92
104	1,2,3-trichloropropane	0.202	0.204	-1.0	103	0.00	14.96
105	n-propylbenzene	4.812	4.676	2.8	104	0.00	14.98
106	4-Ethyltoluene	4.057	4.044	0.3	107	0.00	15.08
107	2-chlorotoluene	0.980	0.953	2.8	104	0.00	15.13
108	4-chlorotoluene	0.986	0.954	3.2	104	0.00	15.23
109	1,3,5-trimethylbenzene	3.515	3.376	4.0	104	0.00	15.13
110	tert-butylbenzene	3.061	2.979	2.7	104	0.00	15.47
111	pentachloroethane	0.623	0.627	-0.6	106	0.00	15.56
112	1,2,4-trimethylbenzene	3.483	3.336	4.2	103	0.00	15.52
113	sec-butylbenzene	4.543	4.446	2.1	104	0.00	15.68
114	1,3-dichlorobenzene	1.849	1.814	1.9	104	0.00	15.88
115	p-isopropyltoluene	3.771	3.660	2.9	104	0.00	15.80
116	1,4-dichlorobenzene	1.888	1.808	4.2	105	0.00	15.96
117	1,2-dichlorobenzene	1.743	1.689	3.1	104	0.00	16.35
118	1,4-Diethylbenzene	2.311	2.349	-1.6	109	0.00	16.18
119	n-butylbenzene	1.965	1.943	1.1	105	0.00	16.21
120	1,2,4,5-Tetramethylbenzen	3.655	3.766	-3.0	108	0.00	16.96
121	1,2-dibromo-3-chloropropa	0.138	0.136	1.4	108	0.00	17.12
122	1,3,5-Trichlorobenzene	1.469	1.508	-2.7	107	0.00	17.30
123	1,2,4-trichlorobenzene	1.139	1.213	-6.5	106	0.00	17.93
124	hexachlorobutadiene	0.815	0.794	2.6	105	0.00	18.04
125	naphthalene	2.111	2.162	-2.4	103	0.00	18.21
126	1,2,3-trichlorobenzene	0.990	1.038	-4.8	105	0.00	18.46
127	hexachloroethane	0.728	0.697	4.3	102	0.00	16.60
128	Benzyl chloride	1.546	1.764	-14.1	124	0.00	16.07

(#) = Out of Range
 3C98238.D M3C4359.M SPCC's out = 0 CCC's out = 0
 Mon May 13 18:02:41 2013 MS3C

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4392-CC4359
 Lab FileID: 3C98882.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\3C\V3C4390-91\3C98882.D Vial: 25
 Acq On : 23 May 2013 8:00 pm Operator: juntaep
 Sample : cc4359-50 Inst : MS3C
 Misc : MS48716,V3C4392,5.0,,,,,1 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3C4359.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Mon Sep 13 11:48:20 2010
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	142	0.00	7.37
2	1,4-dioxane	0.127	0.133	-4.7	142	0.00	11.23
3	tertiary butyl alcohol	2.048	2.036	0.6	138	0.00	7.49
4	Ethanol			-----NA-----			
5 I	pentafluorobenzene	1.000	1.000	0.0	128	0.00	9.59
6	chlorodifluoromethane	0.519	0.407	21.6#	101	0.00	3.98
7	dichlorodifluoromethane	0.737	0.705	4.3	122	0.00	3.97
8	chloromethane	0.732	0.736	-0.5	136	0.00	4.32
9	vinyl chloride	0.866	0.785	9.4	123	0.00	4.56
10	bromomethane	0.414	0.455	-9.9	148	0.00	5.24
11	chloroethane	0.402	0.422	-5.0	140	0.00	5.41
12	Vinyl Bromide			-----NA-----			
13	Pentane			-----NA-----			
14	trichlorofluoromethane	0.837	0.851	-1.7	133	0.01	5.85
15	ethyl ether	0.266	0.268	-0.8	134	0.00	6.27
16	acrolein	0.067	0.070	-4.5	131	0.00	6.53
17	1,1-dichloroethene	0.463	0.471	-1.7	137	0.00	6.70
18	acetone	0.028	0.032	-14.3	138	-0.02	6.74
19	allyl chloride	0.287	0.306	-6.6	133	-0.01	7.22
20	acetonitrile	0.032	0.030	6.3	117	-0.02	7.19
21	iodomethane	0.745	0.801	-7.5	135	0.00	6.98
22	iso-butyl alcohol	0.013	0.012	7.7	121	0.00	9.89
23	carbon disulfide	1.599	1.621	-1.4	129	0.00	7.11
24	methylene chloride	0.504	0.508	-0.8	136	0.00	7.41
25	methyl acetate	0.054	0.062	-14.8	136	0.00	7.21
26	methyl tert butyl ether	1.128	1.131	-0.3	129	0.00	7.73
27	trans-1,2-dichloroethene	0.522	0.533	-2.1	137	0.00	7.79
28	di-isopropyl ether	1.711	1.642	4.0	121	0.00	8.32
29	ethyl tert-butyl ether	1.287	1.262	1.9	123	0.00	8.78
30	2-butanone	0.040	0.041	-2.5	125	0.00	9.06
31	1,1-dichloroethane	0.895	0.913	-2.0	131	0.00	8.35
32	chloroprene	0.745	0.741	0.5	121	-0.01	8.45
33	acrylonitrile	0.114	0.123	-7.9	129	0.00	7.74
34	vinyl acetate	0.076	0.080	-5.3	130	0.00	8.33
35	ethyl acetate	0.050	0.051	-2.0	130	0.00	9.07
36	2,2-dichloropropane	0.745	0.623	16.4	109	0.00	9.09
37	cis-1,2-dichloroethene	0.557	0.569	-2.2	138	0.00	9.09
38	propionitrile	0.045	0.048	-6.7	129	0.00	9.15
39	Methyl Acrylate	0.048	0.052	-8.3	125	0.00	9.14
40	bromochloromethane	0.217	0.236	-8.8	134	0.00	9.40
41	tetrahydrofuran	0.135	0.113	16.3	112	0.00	9.43

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4392-CC4359
 Lab FileID: 3C98882.D

42	chloroform	0.846	0.846	0.0	130	0.00	9.45
43	tert-Butyl Formate	0.314	0.309	1.6	124	0.00	9.48
44 S	dibromofluoromethane (s)	0.437	0.407	6.9	123	0.00	9.65
45 S	1,2-dichloroethane-d4 (s)	0.440	0.386	12.3	113	0.00	10.07
46	freon 113	0.360	0.375	-4.2	129	0.00	6.66
47	methacrylonitrile	0.210	0.190	9.5	113	0.00	9.33
48	1,1,1-trichloroethane	0.748	0.758	-1.3	128	0.00	9.70
49	Cyclohexane	0.807	0.813	-0.7	129	0.00	9.77
50	Tert Amyl Alcohol			-----NA-----			
51	2,2,4-trimethylpentane	2.065	2.010	2.7	128	0.00	10.13
52	tert-amyl methyl ether	1.193	1.146	3.9	129	0.00	10.16
53 I	1,4-difluorobenzene	1.000	1.000	0.0	132	0.00	10.51
54	epichlorohydrin	0.024	0.023	4.2	123	0.00	11.77
55	n-butyl alcohol	0.008	0.008	0.0	129	0.00	10.63
56	carbon tetrachloride	0.468	0.456	2.6	127	0.00	9.91
57	1,1-dichloropropene	0.489	0.477	2.5	127	0.00	9.88
58	hexane	0.539	0.454	15.8	119	0.00	8.08
59	benzene	1.483	1.455	1.9	132	0.00	10.14
60	heptane	0.304	0.288	5.3	123	0.00	10.30
61	isopropyl acetate	0.509	0.893	-75.4#	218#	0.00	10.05
62	1,2-dichloroethane	0.370	0.344	7.0	118	0.00	10.16
63	trichloroethene	0.347	0.347	0.0	131	0.00	10.86
64	ethyl acrylate			-----NA-----			
65	Tert-Amyl ethyl ether			-----NA-----			
66	2-nitropropane	0.087	0.078	10.3	119	0.00	11.63
67	2-chloroethyl vinyl ether	0.118	0.144	-22.0#	149	0.00	11.63
68	methyl methacrylate	0.065	0.072	-10.8	132	0.00	11.11
69	1,2-dichloropropane	0.352	0.345	2.0	128	0.00	11.12
70	methylcyclohexane	0.629	0.662	-5.2	136	0.00	11.07
71	dibromomethane	0.160	0.163	-1.9	132	0.00	11.28
72	bromodichloromethane	0.411	0.410	0.2	127	0.00	11.41
73	cis-1,3-dichloropropene	0.527	0.506	4.0	125	0.00	11.86
74 S	toluene-d8 (s)	1.249	1.182	5.4	128	0.00	12.14
75	4-methyl-2-pentanone	0.096	0.097	-1.0	131	0.00	11.95
76	toluene	0.863	0.876	-1.5	133	0.00	12.21
77	3-methyl-1-butanol	0.007	0.008	-14.3	131	0.00	11.96
78	trans-1,3-dichloropropene	0.436	0.419	3.9	123	0.00	12.41
79	ethyl methacrylate	0.336	0.346	-3.0	127	0.00	12.40
80	1,1,2-trichloroethane	0.195	0.202	-3.6	132	0.00	12.63
81	2-hexanone	0.081	0.082	-1.2	123	0.00	12.79
82 I	chlorobenzene-d5	1.000	1.000	0.0	140	0.00	13.64
83	tetrachloroethene	0.490	0.479	2.2	132	0.00	12.80
84	1,3-dichloropropane	0.529	0.503	4.9	129	0.00	12.81
85	butyl acetate	0.213	0.199	6.6	125	0.00	12.86
86	dibromochloromethane	0.361	0.352	2.5	131	0.00	13.07
87	1,2-dibromoethane	0.284	0.282	0.7	131	0.00	13.22
88	3,3-Dimethyl-1-Butanol	0.032	0.032	0.0	127	0.00	12.96
89	chlorobenzene	1.142	1.091	4.5	131	0.00	13.67
90	1,1,1,2-tetrachloroethane	0.416	0.403	3.1	131	0.00	13.73
91	ethylbenzene	2.058	1.941	5.7	132	0.00	13.72
92	m,p-xylene	0.785	0.750	4.5	131	0.00	13.82
93	o-xylene	0.770	0.736	4.4	132	0.00	14.24
94	styrene	1.247	1.184	5.1	130	0.00	14.25
95	BUTYL ACRYLATE			-----NA-----			
96	bromoform	0.226	0.223	1.3	131	0.00	14.52
97 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	133	0.00	15.93
98	isopropylbenzene	4.197	4.134	1.5	132	0.00	14.57

6.9.3
6

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4392-CC4359
 Lab FileID: 3C98882.D

99 S	4-bromofluorobenzene (s)	1.121	1.044	6.9	128	0.00	14.78
100	bromobenzene	0.960	0.937	2.4	132	0.00	14.97
101	cyclohexanone	0.043	0.020	53.5#	55	0.00	14.74
102	1,1,2,2-tetrachloroethane	0.770	0.765	0.6	131	0.00	14.88
103	trans-1,4-dichloro-2-bute	0.209	0.165	21.1#	107	0.00	14.92
104	1,2,3-trichloropropane	0.202	0.206	-2.0	132	0.00	14.96
105	n-propylbenzene	4.812	4.604	4.3	129	0.00	14.98
106	4-Ethyltoluene			-----NA-----			
107	2-chlorotoluene	0.980	0.948	3.3	131	0.00	15.12
108	4-chlorotoluene	0.986	0.947	4.0	130	0.00	15.22
109	1,3,5-trimethylbenzene	3.515	3.350	4.7	131	0.00	15.12
110	tert-butylbenzene	3.061	3.406	-11.3	150	0.00	15.47
111	pentachloroethane	0.623	0.594	4.7	126	0.00	15.56
112	1,2,4-trimethylbenzene	3.483	3.276	5.9	128	0.00	15.52
113	sec-butylbenzene	4.543	4.446	2.1	132	0.00	15.68
114	1,3-dichlorobenzene	1.849	1.759	4.9	128	0.00	15.88
115	p-isopropyltoluene	3.771	3.550	5.9	128	0.00	15.80
116	1,4-dichlorobenzene	1.888	1.754	7.1	128	0.00	15.95
117	1,2-dichlorobenzene	1.743	1.626	6.7	127	0.00	16.35
118	1,4-Diethylbenzene			-----NA-----			
119	n-butylbenzene	1.965	1.788	9.0	122	0.00	16.21
120	1,2,4,5-Tetramethylbenzen			-----NA-----			
121	1,2-dibromo-3-chloropropa	0.138	0.121	12.3	122	0.00	17.12
122	1,3,5-Trichlorobenzene	1.469	1.346	8.4	121	0.00	17.30
123	1,2,4-trichlorobenzene	1.139	1.080	5.2	119	0.00	17.93
124	hexachlorobutadiene	0.815	0.744	8.7	124	0.00	18.04
125	naphthalene	2.111	2.021	4.3	122	0.00	18.21
126	1,2,3-trichlorobenzene	0.990	0.938	5.3	120	0.00	18.45
127	hexachloroethane	0.728	0.698	4.1	130	0.00	16.60
128	Benzyl chloride	1.546	1.113	28.0#	98	0.00	16.07

(#) = Out of Range
 3C98238.D M3C4359.M

SPCC's out = 0 CCC's out = 0
 Fri May 24 12:10:29 2013 ACCNJ

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4393-CC4359
 Lab FileID: 3C98907.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\3C\v3c4392-93\3C98907.D Vial: 2
 Acq On : 24 May 2013 8:07 am Operator: juntaep
 Sample : cc4359-20 Inst : MS3C
 Misc : MS48716,V3C4393,5.0,,,,,1 Multiplr: 1.00
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3C4359.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Mon Sep 13 11:48:20 2010
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	145	-0.01	7.36
2	1,4-dioxane	0.127	0.129	-1.6	141	0.00	11.23
3	tertiary butyl alcohol	2.048	2.007	2.0	130	0.00	7.49
4	Ethanol			-----NA-----			
5 I	pentafluorobenzene	1.000	1.000	0.0	116	0.00	9.59
6	chlorodifluoromethane	0.519	0.430	17.1	98	0.00	3.99
7	dichlorodifluoromethane	0.737	0.735	0.3	112	0.02	3.98
8	chloromethane	0.732	0.764	-4.4	122	0.00	4.32
9	vinyl chloride	0.866	0.785	9.4	106	0.00	4.57
10	bromomethane	0.414	0.447	-8.0	127	0.00	5.24
11	chloroethane	0.402	0.420	-4.5	122	0.01	5.42
12	Vinyl Bromide			-----NA-----			
13	Pentane			-----NA-----			
14	trichlorofluoromethane	0.837	0.874	-4.4	119	0.01	5.85
15	ethyl ether	0.266	0.278	-4.5	124	0.00	6.27
16	acrolein	0.067	0.072	-7.5	127	0.00	6.54
17	1,1-dichloroethene	0.463	0.469	-1.3	126	0.00	6.70
18	acetone	0.028	0.032	-14.3	123	0.00	6.75
19	allyl chloride	0.287	0.305	-6.3	125	0.00	7.23
20	acetonitrile	0.032	0.037	-15.6	142	0.00	7.21
21	iodomethane	0.745	0.794	-6.6	124	0.00	6.98
22	iso-butyl alcohol	0.013	0.014	-7.7	122	0.00	9.89
23	carbon disulfide	1.599	1.659	-3.8	123	0.00	7.11
24	methylene chloride	0.504	0.589	-16.9	141	0.00	7.42
25	methyl acetate	0.054	0.065	-20.4#	138	0.00	7.21
26	methyl tert butyl ether	1.128	1.180	-4.6	127	0.00	7.74
27	trans-1,2-dichloroethene	0.522	0.537	-2.9	129	0.00	7.79
28	di-isopropyl ether	1.711	1.731	-1.2	115	0.00	8.32
29	ethyl tert-butyl ether	1.287	1.319	-2.5	117	0.00	8.79
30	2-butanone	0.040	0.042	-5.0	131	0.00	9.06
31	1,1-dichloroethane	0.895	0.919	-2.7	123	0.00	8.36
32	chloroprene	0.745	0.768	-3.1	114	0.00	8.46
33	acrylonitrile	0.114	0.128	-12.3	127	0.00	7.75
34	vinyl acetate	0.076	0.080	-5.3	125	0.01	8.34
35	ethyl acetate	0.050	0.055	-10.0	133	0.00	9.07
36	2,2-dichloropropane	0.745	0.637	14.5	104	0.00	9.09
37	cis-1,2-dichloroethene	0.557	0.576	-3.4	127	0.00	9.09
38	propionitrile	0.045	0.049	-8.9	127	0.00	9.16
39	Methyl Acrylate	0.048	0.050	-4.2	127	0.00	9.15
40	bromochloromethane	0.217	0.241	-11.1	128	0.00	9.40
41	tetrahydrofuran	0.135	0.126	6.7	115	0.00	9.43

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4393-CC4359
 Lab FileID: 3C98907.D

42	chloroform	0.846	0.864	-2.1	124	0.00	9.45
43	tert-Butyl Formate	0.314	0.329	-4.8	120	0.00	9.48
44 S	dibromofluoromethane (s)	0.437	0.419	4.1	114	0.00	9.65
45 S	1,2-dichloroethane-d4 (s)	0.440	0.394	10.5	107	0.00	10.07
46	freon 113	0.360	0.378	-5.0	119	0.00	6.67
47	methacrylonitrile	0.210	0.200	4.8	114	0.00	9.34
48	1,1,1-trichloroethane	0.748	0.799	-6.8	125	0.00	9.70
49	Cyclohexane	0.807	0.853	-5.7	126	0.00	9.77
50	Tert Amyl Alcohol			-----NA-----			
51	2,2,4-trimethylpentane	2.065	2.056	0.4	120	0.00	10.13
52	tert-amyl methyl ether	1.193	1.235	-3.5	122	0.00	10.16
53 I	1,4-difluorobenzene	1.000	1.000	0.0	121	0.00	10.51
54	epichlorohydrin	0.024	0.025	-4.2	127	0.00	11.77
55	n-butyl alcohol	0.008	0.008	0.0	128	0.00	10.63
56	carbon tetrachloride	0.468	0.475	-1.5	124	0.00	9.91
57	1,1-dichloropropene	0.489	0.488	0.2	123	0.00	9.88
58	hexane	0.539	0.455	15.6	109	0.00	8.08
59	benzene	1.483	1.482	0.1	127	0.00	10.14
60	heptane	0.304	0.269	11.5	107	0.00	10.30
61	isopropyl acetate	0.509	0.951	-86.8#	220#	0.00	10.05
62	1,2-dichloroethane	0.370	0.362	2.2	116	0.00	10.16
63	trichloroethene	0.347	0.354	-2.0	128	0.00	10.86
64	ethyl acrylate			-----NA-----			
65	Tert-Amyl ethyl ether			-----NA-----			
66	2-nitropropane	0.087	0.083	4.6	123	-0.01	11.62
67	2-chloroethyl vinyl ether	0.118	0.145	-22.9#	144	0.00	11.64
68	methyl methacrylate	0.065	0.070	-7.7	128	0.00	11.12
69	1,2-dichloropropane	0.352	0.353	-0.3	124	0.00	11.12
70	methylcyclohexane	0.629	0.700	-11.3	131	0.00	11.07
71	dibromomethane	0.160	0.163	-1.9	126	0.00	11.28
72	bromodichloromethane	0.411	0.422	-2.7	125	0.00	11.41
73	cis-1,3-dichloropropene	0.527	0.513	2.7	120	0.00	11.86
74 S	toluene-d8 (s)	1.249	1.193	4.5	118	0.00	12.14
75	4-methyl-2-pentanone	0.096	0.100	-4.2	130	0.00	11.95
76	toluene	0.863	0.898	-4.1	129	0.00	12.22
77	3-methyl-1-butanol	0.007	0.008	-14.3	132	0.00	11.96
78	trans-1,3-dichloropropene	0.436	0.436	0.0	123	0.00	12.41
79	ethyl methacrylate	0.336	0.346	-3.0	123	0.00	12.40
80	1,1,2-trichloroethane	0.195	0.202	-3.6	128	0.00	12.63
81	2-hexanone	0.081	0.089	-9.9	135	0.00	12.80
82 I	chlorobenzene-d5	1.000	1.000	0.0	129	0.00	13.64
83	tetrachloroethene	0.490	0.462	5.7	123	0.00	12.80
84	1,3-dichloropropane	0.529	0.512	3.2	127	0.00	12.81
85	butyl acetate	0.213	0.202	5.2	120	0.00	12.86
86	dibromochloromethane	0.361	0.349	3.3	130	0.00	13.07
87	1,2-dibromoethane	0.284	0.286	-0.7	130	0.00	13.22
88	3,3-Dimethyl-1-Butanol	0.032	0.031	3.1	125	0.00	12.96
89	chlorobenzene	1.142	1.101	3.6	126	0.00	13.67
90	1,1,1,2-tetrachloroethane	0.416	0.401	3.6	125	0.00	13.73
91	ethylbenzene	2.058	1.993	3.2	128	0.00	13.72
92	m,p-xylene	0.785	0.761	3.1	128	0.00	13.82
93	o-xylene	0.770	0.758	1.6	131	0.00	14.24
94	styrene	1.247	1.162	6.8	123	0.00	14.25
95	BUTYL ACRYLATE			-----NA-----			
96	bromoform	0.226	0.223	1.3	130	0.00	14.52
97 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	126	0.00	15.93
98	isopropylbenzene	4.197	4.171	0.6	127	0.00	14.57

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: V3C4393-CC4359
 Lab FileID: 3C98907.D

99 S	4-bromofluorobenzene (s)	1.121	1.043	7.0	118	0.00	14.78
100	bromobenzene	0.960	0.951	0.9	126	0.00	14.97
101	cyclohexanone	0.043	0.021	51.2#	64	0.00	14.75
102	1,1,2,2-tetrachloroethane	0.770	0.782	-1.6	133	0.00	14.88
103	trans-1,4-dichloro-2-bute	0.209	0.176	15.8	115	0.00	14.92
104	1,2,3-trichloropropane	0.202	0.209	-3.5	132	0.00	14.96
105	n-propylbenzene	4.812	4.713	2.1	126	0.00	14.98
106	4-Ethyltoluene			-----NA-----			
107	2-chlorotoluene	0.980	0.959	2.1	128	0.00	15.12
108	4-chlorotoluene	0.986	0.947	4.0	127	0.00	15.22
109	1,3,5-trimethylbenzene	3.515	3.392	3.5	126	0.00	15.12
110	tert-butylbenzene	3.061	3.439	-12.3	147	0.00	15.47
111	pentachloroethane	0.623	0.608	2.4	126	0.00	15.56
112	1,2,4-trimethylbenzene	3.483	3.327	4.5	125	0.00	15.52
113	sec-butylbenzene	4.543	4.514	0.6	129	0.00	15.68
114	1,3-dichlorobenzene	1.849	1.805	2.4	125	0.00	15.88
115	p-isopropyltoluene	3.771	3.581	5.0	126	0.00	15.80
116	1,4-dichlorobenzene	1.888	1.790	5.2	126	0.00	15.95
117	1,2-dichlorobenzene	1.743	1.687	3.2	126	0.00	16.35
118	1,4-Diethylbenzene			-----NA-----			
119	n-butylbenzene	1.965	1.797	8.5	119	0.00	16.21
120	1,2,4,5-Tetramethylbenzen			-----NA-----			
121	1,2-dibromo-3-chloropropa	0.138	0.127	8.0	121	0.00	17.12
122	1,3,5-Trichlorobenzene	1.469	1.375	6.4	122	0.00	17.30
123	1,2,4-trichlorobenzene	1.139	1.056	7.3	118	0.00	17.93
124	hexachlorobutadiene	0.815	0.755	7.4	117	0.00	18.04
125	naphthalene	2.111	1.948	7.7	121	0.00	18.21
126	1,2,3-trichlorobenzene	0.990	0.914	7.7	115	0.00	18.45
127	hexachloroethane	0.728	0.703	3.4	127	0.00	16.60
128	Benzyl chloride	1.546	1.175	24.0#	99	0.00	16.07

(#) = Out of Range
 3C98237.D M3C4359.M

SPCC's out = 0 CCC's out = 0
 Tue May 28 17:22:46 2013 ACCNJ

Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICC8922
 Lab FileID: E202998.D

Response Factor Report MSE

Method : C:\MSDCHEM\1\METHODS\ME8922.M (RTE Integrator)
 Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 Last Update : Fri May 10 08:11:20 2013
 Response via : Initial Calibration

Calibration Files

5 =E202995.D 2 =E202994.D 20 =E202997.D 50 =E202998.D
 100 =E202999.D 1 =E202993.D 200 =E203000.D 0.5 =E202992.D
 10 =E202996.D =

Compound	5	2	20	50	100	1	200	0.5	10	Avg	%RSD
1) Tert Butyl Alcohol-d9	-----ISTD-----										
2) 1,4-dioxane	0.063		0.090	0.074	0.071		0.070		0.077	0.074	12.31
3) tertiary butyl alcohol	1.153	1.078	1.269	1.154	1.143	1.126	0.952		1.212	1.136	8.24
4) ethanol										0.000#	-1.00
5) I pentafluorobenzene	-----ISTD-----										
6) freon 23										0.000#	-1.00
7) freon 115										0.000#	-1.00
8) freon 143a										0.000#	-1.00
9) freon 152a										0.000#	-1.00
10) chlorotrifluoroethene										0.000#	-1.00
11) chlorodifluoromethane	0.590	0.553	0.727	0.614	0.668	0.717	0.618		0.656	0.643	9.41
12) dichlorodifluoromethane	0.744	0.532	0.770	0.763	0.797	0.687	0.768		0.794	0.732	11.97
13) freon 114										0.000#	-1.00
14) freon 142b										0.000#	-1.00
15) chloromethane	0.912	0.806	0.974	0.899	0.851	0.991	0.801	0.911	0.969	0.902	7.80
16) vinyl chloride	1.029	0.787	1.089	1.016	1.013	1.082	0.952	0.933	1.067	0.996	9.57
17) 1,3-Butadiene										0.000#	-1.00
18) acetaldehyde										0.000#	-1.00
19) bromomethane	0.589	0.593	0.629	0.603	0.617	0.726	0.620		0.631	0.626	6.90
20) chloroethane	0.440	0.380	0.496	0.480	0.510	0.411	0.528		0.486	0.466	11.01
21) vinyl bromide										0.000#	-1.00
22) trichlorofluoromethane	0.924	0.767	1.019	0.977	1.034	1.016	1.029		1.043	0.976	9.53
23) pentane											

Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICC8922
 Lab FileID: E202998.D

24)	ethyl ether	0.946	1.022	0.926	0.905	1.079	1.072	1.075	0.949	0.997	7.34	
25)	freon 141b	0.304	0.326	0.339	0.314	0.335	0.403	0.340	0.322	0.335	8.97	
26)	freon 123a									0.000#	-1.00	
27)	freon 123									0.000#	-1.00	
28)	2-chloropropane									0.000#	-1.00	
29)	acrolein	0.762	0.761	1.021	0.934	0.967		0.913	0.960	0.903	11.31	
30)	1,1-dichloroethene	0.119	0.128	0.141	0.120		0.131		0.132	0.128	6.41	
31)	isopropyl alcohol	0.374	0.351	0.500	0.451	0.477	0.375	0.453	0.491	0.434	13.51	
32)	acetone									0.000#	-1.00	
33)	allyl chloride			0.056	0.054	0.053		0.051	0.046	0.052	7.51	
34)	acetonitrile	0.917	0.977	0.952	0.831	0.855		0.801	1.045	0.911	9.56	
35)	iodomethane	0.034	0.032	0.040	0.037	0.035		0.029	0.038	0.035	9.99	
36)	iso-butyl alcohol	0.798	0.704	0.994	0.905	0.958	0.811	0.923	0.951	0.880	11.30	
37)	carbon disulfide									0.000#	-1.00	
38)	methylene chloride	1.309	1.221	1.757	1.615	1.643	1.494	1.557	1.681	1.535	12.08	
39)	1-chloropropane	0.500	0.442	0.584	0.534	0.554	0.552	0.521	0.558	0.531	8.27	
40)	methyl acetate	0.940	0.940	1.028	0.924	0.957		0.895	1.076	0.966	6.58	
41)	methyl tert butyl ether	0.462	0.450	0.510	0.454	0.466	0.476	0.432	0.466	0.465	4.84	
42)	trans-1,2-dichloroethene	1.621	1.347	1.739	1.616	1.661	1.537	1.566	1.683	1.596	7.48	
43)	di-isopropyl ether	0.410	0.362	0.529	0.483	0.500	0.488	0.471	0.518	0.470	12.01	
44)	ethyl tert-butyl ether	1.791	1.816	1.931	1.717	1.793	2.060	1.639	1.864	1.826	7.06	
45)	2-butanone	1.719	1.709	1.875	1.701	1.800	1.853	1.640	1.587	1.760	1.738	5.43
46)	1,1-dichloroethane	0.051		0.072	0.064	0.068		0.065	0.061	0.063	11.36	
47)	chloroprene	0.818	0.718	1.011	0.927	0.955	0.807	0.906	0.971	0.889	11.16	
48)	acrylonitrile	0.707	0.694	0.822	0.724	0.782	0.770	0.716	0.759	0.747	5.85	
49)	vinyl acetate	0.216	0.180	0.242	0.227	0.230	0.187	0.219	0.238	0.217	10.44	
50)	ethyl acetate	0.075		0.101	0.097	0.105		0.096	0.089	0.094	11.41	
51)	2,2-dichloropropane	0.082		0.090	0.084	0.088		0.083	0.088	0.086	3.83	
52)	cis-1,2-dichloroethene	0.622	0.597	0.817	0.722	0.750	0.712	0.713	0.778	0.714	10.33	
53)	methyl acrylate	0.479	0.452	0.589	0.537	0.554	0.419	0.528	0.562	0.515	11.44	

6.9.5
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Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICC8922
 Lab FileID: E202998.D

	0.516	0.405	0.575	0.533	0.543		0.522	0.561	0.522	10.68	
54)	propionitrile										
	0.090	0.068	0.098	0.089	0.089		0.083	0.095	0.087	11.40	
55)	bromochloromethane										
	0.254	0.198	0.294	0.281	0.290	0.213	0.274	0.287	0.261	14.17	
56)	tetrahydrofuran										
	0.223	0.172	0.238	0.214	0.221		0.207	0.225	0.214	9.80	
57)	chloroform										
	0.796	0.726	0.964	0.889	0.911	0.875	0.855	0.943	0.870	8.97	
58)	t-butyl formate										
	0.462	0.424	0.510	0.488	0.522	0.464	0.493	0.488	0.481	6.40	
59)	Iso-octane										
	1.542	1.723	1.839	1.545	1.771	2.045	1.623	1.600	1.708	1.710	9.42
60)	dibromofluoromethane (s)										
	0.465	0.436	0.492	0.468	0.480		0.467	0.489	0.471	4.00	
61)	1,2-dichloroethane-d4 (s)										
	0.615	0.572	0.652	0.600	0.614	0.644	0.585	0.637	0.615	4.67	
62)	freon 113										
	0.330	0.309	0.399	0.342	0.384	0.339	0.353	0.384	0.355	8.71	
63)	methacrylonitrile										
	0.334	0.282	0.397	0.371	0.379		0.363	0.375	0.357	10.70	
64)	1,1,1-trichloroethane										
	0.617	0.520	0.819	0.753	0.799	0.652	0.755	0.774	0.711	14.62	
65)	tert-amyl methyl ether										
	1.577	1.629	1.674	1.500	1.586	1.784	1.461	1.521	1.592	6.12	
66)	I	1,4-difluorobenzene -----ISTD-----									
67)	Di-isobutylene										
									0.000#	-1.00	
68)	tert amyl alcohol										
	0.021	0.015	0.020	0.017	0.016			0.020	0.018	13.00	
69)	epichlorohydrin										
	0.044	0.039	0.048	0.043	0.043	0.041	0.041	0.047	0.043	7.60	
70)	n-butyl alcohol										
	0.013	0.011	0.015	0.013	0.012	0.013	0.011	0.013	0.013	10.60	
71)	tert-amyl ethyl ether										
	0.559	0.455	0.508	0.475	0.491	0.458	0.467	0.492	0.488	6.99	
72)	carbon tetrachloride										
	0.377	0.343	0.507	0.466	0.487	0.431	0.470	0.483	0.445	12.97	
73)	1,1-dichloropropene										
	0.381	0.354	0.510	0.471	0.482	0.428	0.463	0.505	0.449	12.70	
74)	hexane										
	0.428	0.479	0.509	0.438	0.480	0.580	0.451	0.480	0.481	10.02	
75)	benzene										
	1.216	1.120	1.486	1.336	1.351	1.331	1.287	0.922	1.422	1.275	13.34
76)	heptane										
	0.217	0.245	0.269	0.235	0.261	0.280	0.246	0.250	0.250	7.91	
77)	isopropyl acetate										
	0.853	0.876	0.866	0.767	0.779	0.923	0.733	0.838	0.829	7.71	
78)	1,2-dichloroethane										
	0.505	0.408	0.567	0.520	0.528	0.530	0.509	0.549	0.514	9.24	
79)	ethyl acrylate										
									0.000#	-1.00	
80)	trichloroethene										
	0.291	0.259	0.394	0.362	0.374	0.302	0.364	0.365	0.339	14.21	
81)	2-nitropropane										
									0.000#	-1.00	
82)	2-chloroethyl vinyl ether										
	0.250	0.230	0.273	0.247	0.255	0.257	0.242	0.250	0.251	4.99	
83)	methylcyclohexane										

6.9.5
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Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICC8922
 Lab FileID: E202998.D

84)	methyl methacrylate	0.525	0.565	0.621	0.519	0.585	0.674	0.554	0.467	0.590	0.567	10.70
		0.349	0.299	0.410	0.366	0.389	0.334	0.380		0.383	0.364	9.63
85)	1,2-dichloropropane	0.347	0.283	0.410	0.372	0.380	0.343	0.373		0.395	0.363	10.80
86)	dibromomethane	0.224	0.174	0.252	0.239	0.243	0.184	0.239		0.238	0.224	13.04
87)	bromodichloromethane	0.446	0.369	0.523	0.497	0.510	0.434	0.495		0.495	0.471	10.91
88)	cis-1,3-dichloropropene	0.549	0.451	0.641	0.603	0.612	0.496	0.599		0.605	0.569	11.48
89)	toluene-d8 (s)	1.251	1.196	1.339	1.227	1.218	1.533	1.192		1.305	1.282	8.86
90)	4-methyl-2-pentanone	0.160		0.179	0.168	0.164		0.160		0.172	0.167	4.54
91)	toluene	0.751	0.655	0.919	0.837	0.847	0.784	0.831		0.879	0.813	10.09
92)	3-methyl-1-butanol	0.022	0.019	0.025	0.021	0.020	0.023	0.018		0.022	0.021	11.48
93)	trans-1,3-dichloropropene	0.494	0.394	0.595	0.568	0.574	0.436	0.568		0.553	0.523	14.09
94)	ethyl methacrylate	0.460		0.532	0.502	0.512		0.502		0.515	0.504	4.80
95)	1,1,2-trichloroethane	0.274	0.214	0.299	0.281	0.285	0.244	0.280		0.281	0.270	10.08
96)	2-hexanone	0.141		0.159	0.152	0.154		0.153		0.148	0.151	4.22
97)	I chlorobenzene-d5	-----ISTD-----										
98)	cyclohexanone	0.033	0.027	0.025	0.020	0.023	0.022			0.029	0.026	17.00
		----- Linear regression ----- Coefficient = 0.9951										
		Response Ratio = 0.00536 + 0.02199 *A										
99)	tetrachloroethene	0.382	0.346	0.491	0.455	0.463	0.429	0.432		0.459	0.432	10.91
100)	1,3-dichloropropane	0.581	0.498	0.658	0.607	0.611	0.523	0.571		0.618	0.583	8.97
101)	butyl acetate	0.260	0.249	0.288	0.261	0.268	0.269	0.245		0.270	0.264	5.02
102)	3,3-dimethyl-1-butanol	0.053	0.050	0.056	0.051	0.046	0.065	0.040		0.054	0.052	14.43
103)	dibromochloromethane	0.394	0.323	0.447	0.424	0.442	0.357	0.422		0.430	0.405	10.88
104)	1,2-dibromoethane	0.368	0.289	0.405	0.389	0.394	0.325	0.372		0.389	0.366	10.81
105)	n-butyl ether										0.000#	-1.00
106)	chlorobenzene	0.925	0.788	1.110	1.019	1.041	0.930	0.980	0.672	1.054	0.947	14.71
107)	1,1,1,2-tetrachloroethane	0.351	0.303	0.416	0.386	0.406	0.326	0.397		0.403	0.374	11.14
108)	ethylbenzene	1.494	1.333	1.848	1.680	1.704	1.604	1.587	1.139	1.775	1.574	14.18
109)	m,p-xylene	0.568	0.511	0.718	0.654	0.675	0.642	0.650	0.383	0.695	0.611	17.41
		----- Linear regression ----- Coefficient = 0.9996										
		Response Ratio = 0.01042 + 0.65343 *A										
110)	o-xylene											

Initial Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICC8922
 Lab FileID: E202998.D

111)	butyl acrylate	0.587	0.531	0.730	0.683	0.709	0.618	0.692	0.698	0.656	10.63
										0.000#	-1.00
112)	styrene	0.996	0.819	1.230	1.156	1.191	0.932	1.137	1.168	1.079	13.51
113)	bromofom	0.294	0.243	0.337	0.332	0.354	0.242	0.341	0.322	0.308	14.32
114)	I 1,4-dichlorobenzene-d	-----ISTD-----									
115)	isopropylbenzene	2.715	2.473	3.506	3.211	3.187	2.899	2.970	3.293	3.032	11.04
116)	4-bromofluorobenzene (s)	0.927	0.901	1.009	0.938	0.933	1.070	0.904	0.950	0.954	6.06
117)	bromobenzene	0.806	0.704	0.975	0.900	0.913	0.763	0.876	0.936	0.859	10.82
118)	1,1,2,2-tetrachloroethane	0.939	0.781	0.995	0.927	0.911	0.896	0.851	0.685	0.958	10.97
119)	trans-1,4-dichloro-2-butene	0.259	0.201	0.294	0.283	0.286		0.275	0.264	0.266	11.65
120)	1,2,3-trichloropropane	0.259	0.204	0.266	0.254	0.248	0.200	0.236	0.265	0.241	10.83
121)	n-propylbenzene	3.117	2.915	3.996	3.638	3.616	3.253	3.361	3.817	3.464	10.57
122)	p-ethyltoluene	3.419	2.952	3.301	2.979	3.040	3.242	2.703	2.358	3.254	11.00
123)	2-chlorotoluene	0.682	0.605	0.854	0.791	0.812	0.643	0.800	0.807	0.749	12.29
124)	4-chlorotoluene	2.017	1.862	2.460	2.325	2.316	2.046	2.175	2.352	2.194	9.30
125)	1,3,5-trimethylbenzene	2.329	2.119	2.775	2.659	2.607	2.432	2.580	1.891	2.654	11.81
126)	tert-butylbenzene	1.920	1.761	2.512	2.375	2.453	2.181	2.323	2.320	2.231	11.81
127)	pentachloroethane	0.482	0.400	0.558	0.538	0.554	0.430	0.537	0.543	0.505	12.04
128)	1,2,4-trimethylbenzene	2.361	2.189	2.938	2.709	2.722	2.725	2.565	2.770	2.622	9.22
129)	sec-butylbenzene	2.761	2.512	3.676	3.457	3.498	2.984	3.258	3.476	3.202	12.79
130)	1,3-dichlorobenzene	1.450	1.310	1.714	1.632	1.655	1.461	1.572	1.615	1.551	8.61
131)	p-isopropyltoluene	2.339	2.060	3.074	2.890	2.975	2.432	2.795	2.853	2.677	13.33
132)	1,4-dichlorobenzene	1.467	1.270	1.734	1.649	1.691	1.514	1.610	1.126	1.653	13.50
133)	benzyl chloride	1.538	1.369	1.779	1.687	1.774	1.793	1.633	1.169	1.630	13.14
134)	p-diethylbenzene	1.678	1.418	1.752	1.658	1.729	1.498	1.622	1.093	1.663	13.26
135)	1,2-dichlorobenzene	1.386	1.228	1.698	1.613	1.655	1.431	1.566	1.587	1.521	10.43
136)	n-butylbenzene	1.209	1.070	1.612	1.510	1.571		1.510	1.507	1.427	14.30
137)	1,2,4,5-tetramethylbenzene	2.875	2.441	2.847	2.724	2.783	2.477	2.478	1.991	2.736	10.82
138)	1,2-dibromo-3-chloropropane	0.164	0.128	0.197	0.189	0.193		0.180	0.184	0.176	13.46
139)	1,3,5-trichlorobenzene	1.114	0.930	1.423	1.396	1.423	1.169	1.293	1.313	1.257	13.91
140)	1,2,4-trichlorobenzene										

6.9.5

6

Initial Calibration Summary

Job Number: JB37539
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICC8922
Lab FileID: E202998.D

141)	hexachlorobutadiene	0.973	0.826	1.248	1.238	1.249	1.145	1.134	1.116	14.43		
142)	naphthalene	0.486	0.479	0.691	0.625	0.644	0.553	0.592	0.654	0.590	13.27	
143)	MMT	2.273	2.061	2.663	2.606	2.544	2.489	2.318	2.276	2.460	2.410	7.99
144)	1,2,3-trichlorobenzene										0.000#	-1.00
145)	hexachloroethane	0.866	0.728	1.042	1.031	1.024	0.875	0.960	0.965	0.936	11.50	
146)	Cyclohexane	0.415		0.585	0.562	0.590	0.580		0.528	0.543	12.32	
147)	ethyleinimine	0.804	0.805	1.096	0.973	1.022	0.951	0.940	1.082	0.959	11.57	
											0.000#	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

ME8922.M Fri May 10 08:17:34 2013 RPT1

6.9.5
6

Initial Calibration Verification

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICV8922
 Lab FileID: E203003.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E203003.D Vial: 13
 Acq On : 9 May 2013 5:59 pm Operator: Oksanat
 Sample : ICV8922-50 Inst : MSE
 Misc : MS47446,VE8922,5,,100,5,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\ME8922.M (RTE Integrator)
 Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 Last Update : Fri May 10 08:11:20 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	Tert Butyl Alcohol-d9	1.000	1.000	0.0	103	0.00	7.68
2 M	1,4-dioxane	0.074	0.070	5.4	97	0.00	11.54
3 M	tertiary butyl alcohol	1.136	1.141	-0.4	101	0.00	7.80
4	ethanol			-----NA-----			
5 I	pentafluorobenzene	1.000	1.000	0.0	103	0.00	9.91
6	freon 23			-----NA-----			
7	freon 115			-----NA-----			
8	freon 143a			-----NA-----			
9	freon 152a			-----NA-----			
10 M	chlorotrifluoroethene			-----NA-----			
11 M	chlorodifluoromethane	0.643	0.703	-9.3	118	0.00	4.32
12 M	dichlorodifluoromethane	0.732	0.650	11.2	88	0.00	4.31
13	freon 114			-----NA-----			
14	freon 142b			-----NA-----			
15 M	chloromethane	0.902	0.862	4.4	99	0.00	4.67
16 M	vinyl chloride	0.996	0.832	16.5	84	0.00	4.95
17	1,3-Butadiene			-----NA-----			
18 M	acetaldehyde			-----NA-----			
19 M	bromomethane	0.626	0.578	7.7	99	0.00	5.59
20 M	chloroethane	0.466	0.483	-3.6	104	0.00	5.77
21 M	vinyl bromide			-----NA-----			
22 M	trichlorofluoromethane	0.976	0.913	6.5	96	0.00	6.27
23 M	pentane	0.997	0.976	2.1	111	0.00	6.35
24 M	ethyl ether	0.335	0.315	6.0	103	0.00	6.65
25	freon 141b			-----NA-----			
26	freon 123a			-----NA-----			
27	freon 123			-----NA-----			
28 m	2-chloropropane	0.903	0.896	0.8	99	0.00	6.84
29 M	acrolein	0.128	0.130	-1.6	112	0.00	6.86
30 M	1,1-dichloroethene	0.434	0.445	-2.5	102	0.00	7.09
31 M	isopropyl alcohol			-----NA-----			
32 M	acetone	0.052	0.054	-3.8	103	0.00	7.06
33 M	allyl chloride	0.911	0.829	9.0	103	0.00	7.58
34 M	acetonitrile	0.035	0.034	2.9	96	0.00	7.47
35 M	iodomethane	0.880	0.885	-0.6	101	0.00	7.35
36 M	iso-butyl alcohol			-----NA-----			
37 M	carbon disulfide	1.535	1.556	-1.4	99	0.00	7.51
38 M	methylene chloride	0.531	0.510	4.0	98	0.00	7.75
39 m	1-chloropropane	0.966	0.877	9.2	98	0.00	7.81
40 M	methyl acetate	0.465	0.427	8.2	97	0.00	7.53
41 M	methyl tert butyl ether	1.596	1.522	4.7	97	0.00	8.11

Initial Calibration Verification

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICV8922
 Lab FileID: E203003.D

		True	Calc.	% Drift				
42 M	trans-1,2-dichloroethene	0.470	0.453	3.6	97	0.00	8.15	
43 M	di-isopropyl ether	1.826	1.705	6.6	102	0.00	8.69	
44 M	ethyl tert-butyl ether	1.738	1.687	2.9	102	0.00	9.15	
45 M	2-butanone	0.063	0.065	-3.2	105	0.00	9.34	
46 M	1,1-dichloroethane	0.889	0.907	-2.0	101	0.00	8.68	
47 M	chloroprene	0.747	0.726	2.8	103	0.00	8.81	
48 M	acrylonitrile	0.217	0.213	1.8	96	0.00	8.02	
49 M	vinyl acetate	0.094	0.090	4.3	95	0.00	8.65	
50 M	ethyl acetate	0.086	0.077	10.5	95	0.00	9.37	
51 M	2,2-dichloropropane	0.714	0.662	7.3	94	0.00	9.43	
52 M	cis-1,2-dichloroethene	0.515	0.518	-0.6	99	0.00	9.41	
53 m	methyl acrylate	0.522	0.506	3.1	98	0.00	9.46	
54 M	propionitrile	0.087	0.084	3.4	98	0.00	9.40	
55 M	bromochloromethane	0.261	0.267	-2.3	98	0.00	9.71	
56 M	tetrahydrofuran	0.214	0.207	3.3	100	0.00	9.77	
57 M	chloroform	0.870	0.855	1.7	99	0.00	9.76	
58 m	t-butyl formate	0.481	0.499	-3.7	105	0.00	9.80	
59 M	Iso-octane	1.710	1.609	5.9	107	0.00	10.52	
60 S	dibromofluoromethane (s)	0.471	0.457	3.0	101	0.00	9.95	
61 S	1,2-dichloroethane-d4 (s)	0.615	0.579	5.9	99	0.00	10.36	
62 M	freon 113	0.355	0.341	3.9	103	0.00	7.07	
63 M	methacrylonitrile	0.357	0.346	3.1	96	0.00	9.60	
64 M	1,1,1-trichloroethane	0.711	0.734	-3.2	100	0.00	10.05	
65 M	tert-amyl methyl ether	1.592	1.521	4.5	104	0.00	10.52	
66 I	1,4-difluorobenzene	1.000	1.000	0.0	104	0.00	10.82	
67 M	Di-isobutylene			-----NA-----				
68 M	tert amyl alcohol	0.018	0.016	11.1	98	0.00	10.30	
69 M	epichlorohydrin	0.043	0.042	2.3	100	0.00	12.06	
70 M	n-butyl alcohol	0.013	0.012	7.7	96	0.00	10.90	
71 M	tert-amyl ethyl ether	0.488	0.492	-1.4	107	0.00	11.36	
72 M	carbon tetrachloride	0.445	0.460	-3.4	102	0.00	10.27	
73 M	1,1-dichloropropene	0.449	0.435	3.1	96	0.00	10.22	
74 M	hexane	0.481	0.472	1.9	112	0.00	8.48	
75 M	benzene	1.275	1.299	-1.9	101	0.00	10.48	
76 M	heptane	0.250	0.222	11.2	98	0.00	10.68	
77 M	isopropyl acetate	0.829	0.722	12.9	98	0.00	10.36	
78 M	1,2-dichloroethane	0.514	0.499	2.9	99	0.00	10.45	
79	ethyl acrylate			-----NA-----				
80 M	trichloroethene	0.339	0.358	-5.6	102	0.00	11.19	
81 M	2-nitropropane			-----NA-----				
82 M	2-chloroethyl vinyl ether	0.251	0.241	4.0	101	0.00	11.95	
83 M	methylcyclohexane	0.567	0.566	0.2	113	0.00	11.45	
84 M	methyl methacrylate	0.364	0.369	-1.4	104	0.00	11.43	
85 M	1,2-dichloropropane	0.363	0.349	3.9	97	0.00	11.43	
86 M	dibromomethane	0.224	0.229	-2.2	99	0.00	11.59	
87 M	bromodichloromethane	0.471	0.471	0.0	98	0.00	11.71	
88 M	cis-1,3-dichloropropene	0.569	0.531	6.7	91	0.00	12.20	
89 S	toluene-d8 (s)	1.282	1.176	8.3	99	0.00	12.52	
90 M	4-methyl-2-pentanone	0.167	0.161	3.6	99	0.00	12.27	
91 M	toluene	0.813	0.785	3.4	97	0.00	12.60	
92 M	3-methyl-1-butanol	0.021	0.020	4.8	98	0.00	12.28	
93 M	trans-1,3-dichloropropene	0.523	0.528	-1.0	96	0.00	12.77	
94 M	ethyl methacrylate	0.504	0.472	6.3	97	0.00	12.77	
95 M	1,1,2-trichloroethane	0.270	0.271	-0.4	100	0.00	13.00	
96 M	2-hexanone	0.151	0.147	2.6	100	0.00	13.18	
97 I	chlorobenzene-d5	1.000	1.000	0.0	103	0.00	14.15	
	----- True		Calc.	% Drift	-----			

6.9.6
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Initial Calibration Verification

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICV8922
 Lab FileID: E203003.D

Sample ID	Compound	500.000	349.989	30.0#	81	0.00	15.34
98 M	cyclohexanone						
		AvgRF	CCRF	% Dev			
99 M	tetrachloroethene	0.432	0.436	-0.9	99	0.00	13.25
100 M	1,3-dichloropropane	0.583	0.584	-0.2	100	0.00	13.20
101 M	butyl acetate	0.264	0.248	6.1	98	0.00	13.27
102 m	3,3-dimethyl-1-butanol	0.052	0.047	9.6	96	0.00	13.36
103 M	dibromochloromethane	0.405	0.408	-0.7	100	0.00	13.49
104 M	1,2-dibromoethane	0.366	0.363	0.8	97	0.00	13.66
105 M	n-butyl ether			NA			
106 M	chlorobenzene	0.947	0.970	-2.4	99	0.00	14.18
107 M	1,1,1,2-tetrachloroethane	0.374	0.365	2.4	98	0.00	14.24
108 M	ethylbenzene	1.574	1.616	-2.7	100	0.00	14.25
		True	Calc.	% Drift			
109 M	m,p-xylene	100.000	95.365	4.6	99	0.00	14.37
		AvgRF	CCRF	% Dev			
110 M	o-xylene	0.656	0.650	0.9	98	0.00	14.83
111 M	butyl acrylate			NA			
112 M	styrene	1.079	1.100	-1.9	98	0.00	14.83
113 M	bromoform	0.308	0.318	-3.2	99	0.00	15.11
114 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	105	0.00	16.72
115 M	isopropylbenzene	3.032	3.078	-1.5	100	0.00	15.20
116 S	4-bromofluorobenzene (s)	0.954	0.899	5.8	100	0.00	15.42
117 M	bromobenzene	0.859	0.855	0.5	99	0.00	15.65
118 M	1,1,2,2-tetrachloroethane	0.883	0.852	3.5	96	0.00	15.50
119 M	trans-1,4-dichloro-2-bute	0.266	0.263	1.1	97	0.00	15.54
120 M	1,2,3-trichloropropane	0.241	0.238	1.2	98	0.00	15.58
121 M	n-propylbenzene	3.464	3.577	-3.3	103	0.00	15.66
122 M	p-ethyltoluene	3.028	2.905	4.1	102	0.00	15.77
123 M	2-chlorotoluene	0.749	0.751	-0.3	99	0.00	15.82
124 M	4-chlorotoluene	2.194	2.187	0.3	98	0.00	15.92
125 M	1,3,5-trimethylbenzene	2.450	2.519	-2.8	99	0.00	15.82
126 M	tert-butylbenzene	2.231	2.305	-3.3	102	0.00	16.21
127 M	pentachloroethane	0.505	0.512	-1.4	99	0.00	16.30
128 M	1,2,4-trimethylbenzene	2.622	2.579	1.6	100	0.00	16.26
129 M	sec-butylbenzene	3.202	3.294	-2.9	100	0.00	16.45
130 M	1,3-dichlorobenzene	1.551	1.552	-0.1	99	0.00	16.66
131 M	p-isopropyltoluene	2.677	2.871	-7.2	104	0.00	16.58
132 M	1,4-dichlorobenzene	1.524	1.548	-1.6	98	0.00	16.75
133	benzyl chloride	1.597	1.551	2.9	96	0.00	16.86
134 M	p-diethylbenzene	1.568	1.630	-4.0	103	0.00	17.00
135 M	1,2-dichlorobenzene	1.521	1.537	-1.1	100	0.00	17.18
136 M	n-butylbenzene	1.427	1.464	-2.6	101	0.00	17.04
137 M	1,2,4,5-tetramethylbenzen	2.595	2.657	-2.4	102	0.00	17.86
138 M	1,2-dibromo-3-chloropropa	0.176	0.178	-1.1	99	0.00	18.00
139 m	1,3,5-trichlorobenzene	1.257	1.346	-7.1	101	0.00	18.24
140 M	1,2,4-trichlorobenzene	1.116	1.156	-3.6	98	0.00	18.95
141 M	hexachlorobutadiene	0.590	0.616	-4.4	103	0.00	19.10
142 M	naphthalene	2.410	2.386	1.0	96	0.00	19.27
143	MMT			NA			
144 M	1,2,3-trichlorobenzene	0.936	0.971	-3.7	99	0.00	19.54
145 M	hexachloroethane	0.543	0.543	0.0	101	0.00	17.49
146 M	Cyclohexane	0.959	0.979	-2.1	105	0.00	10.16
147	ethyleinimine			NA			

6.9.6
6

Initial Calibration Verification

Job Number: JB37539
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8922-ICV8922
Lab FileID: E203003.D

(#) = Out of Range SPC's out = 0 CCC's out = 0
E202998.D ME8922.M Fri May 10 08:24:51 2013 RPT1

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8952-CC8922
 Lab FileID: E203692.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E203692.D Vial: 28
 Acq On : 28 May 2013 10:27 pm Operator: Oksanat
 Sample : cc8922-50 Inst : MSE
 Misc : MS48600,VE8952,5,,100,5,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\ME8922.M (RTE Integrator)
 Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 Last Update : Fri May 10 15:40:15 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	Tert Butyl Alcohol-d9	1.000	1.000	0.0	124	0.02	7.71
2 M	1,4-dioxane	0.074	0.096	-29.7#	161	0.01	11.55
3 M	tertiary butyl alcohol	1.136	1.168	-2.8	125	0.00	7.81
4	ethanol			-----NA-----			
5 I	pentafluorobenzene	1.000	1.000	0.0	118	0.00	9.91
6	freon 23			-----NA-----			
7	freon 115			-----NA-----			
8	freon 143a			-----NA-----			
9	freon 152a			-----NA-----			
10 M	chlorotrifluoroethene			-----NA-----			
11 M	chlorodifluoromethane	0.643	0.572	11.0	110	0.00	4.32
12 M	dichlorodifluoromethane	0.732	0.756	-3.3	117	0.00	4.30
13	freon 114			-----NA-----			
14	freon 142b			-----NA-----			
15 M	chloromethane	0.902	0.751	16.7	99	-0.02	4.66
16 M	vinyl chloride	0.996	0.870	12.7	101	-0.02	4.93
17	1,3-Butadiene			-----NA-----			
18 M	acetaldehyde			-----NA-----			
19 M	bromomethane	0.626	0.430	31.3#	84	0.00	5.59
20 M	chloroethane	0.466	0.363	22.1#	89	0.00	5.76
21 M	vinyl bromide			-----NA-----			
22 M	trichlorofluoromethane	0.976	0.767	21.4#	93	0.00	6.27
23 M	pentane			-----NA-----			
24 M	ethyl ether	0.335	0.342	-2.1	129	0.00	6.64
25	freon 141b			-----NA-----			
26	freon 123a			-----NA-----			
27	freon 123			-----NA-----			
28 m	2-chloropropane	0.903	0.875	3.1	111	0.00	6.84
29 M	acrolein	0.128	0.124	3.1	122	0.00	6.86
30 M	1,1-dichloroethene	0.434	0.484	-11.5	127	0.00	7.08
31 M	isopropyl alcohol			-----NA-----			
32 M	acetone	0.052	0.059	-13.5	130	0.00	7.08
33 M	allyl chloride	0.911	0.888	2.5	126	0.00	7.57
34 M	acetonitrile	0.035	0.038	-8.6	122	0.02	7.48
35 M	iodomethane	0.880	0.928	-5.5	121	0.00	7.35
36 M	iso-butyl alcohol			-----NA-----			
37 M	carbon disulfide	1.535	1.608	-4.8	118	0.00	7.51
38 M	methylene chloride	0.531	0.563	-6.0	124	0.00	7.75
39 m	1-chloropropane	0.966	0.902	6.6	115	0.00	7.81
40 M	methyl acetate	0.465	0.483	-3.9	125	0.00	7.54
41 M	methyl tert butyl ether	1.596	1.649	-3.3	120	0.00	8.11

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8952-CC8922
 Lab FileID: E203692.D

		True	Calc.	% Drift			
42 M	trans-1,2-dichloroethene	0.470	0.488	-3.8	119	0.00	8.14
43 M	di-isopropyl ether	1.826	1.747	4.3	120	0.00	8.69
44 M	ethyl tert-butyl ether	1.738	1.826	-5.1	127	0.00	9.15
45 M	2-butanone	0.063	0.075	-19.0	138	0.00	9.34
46 M	1,1-dichloroethane	0.889	0.916	-3.0	117	0.00	8.68
47 M	chloroprene	0.747	0.718	3.9	117	0.00	8.81
48 M	acrylonitrile	0.217	0.244	-12.4	127	0.00	8.01
49 M	vinyl acetate	0.094	0.097	-3.2	118	0.00	8.65
50 M	ethyl acetate	0.086	0.087	-1.2	123	0.00	9.37
51 M	2,2-dichloropropane	0.714	0.639	10.5	104	0.00	9.43
52 M	cis-1,2-dichloroethene	0.515	0.531	-3.1	117	0.00	9.40
53 M	methyl acrylate	0.522	0.527	-1.0	117	0.00	9.45
54 M	propionitrile	0.087	0.095	-9.2	126	0.00	9.39
55 M	bromochloromethane	0.261	0.283	-8.4	119	0.00	9.70
56 M	tetrahydrofuran	0.214	0.219	-2.3	121	0.00	9.77
57 M	chloroform	0.870	0.856	1.6	114	0.00	9.75
58 M	t-butyl formate	0.481	0.532	-10.6	129	0.00	9.80
59 M	Iso-octane	1.710	1.764	-3.2	135	0.00	10.52
60 S	dibromofluoromethane (s)	0.471	0.419	11.0	106	0.00	9.94
61 S	1,2-dichloroethane-d4 (s)	0.615	0.492	20.0	97	0.00	10.36
62 M	freon 113	0.355	0.370	-4.2	128	-0.01	7.06
63 M	methacrylonitrile	0.357	0.366	-2.5	116	0.00	9.60
64 M	1,1,1-trichloroethane	0.711	0.721	-1.4	113	0.00	10.05
65 M	tert-amyl methyl ether	1.592	1.634	-2.6	129	0.00	10.51
66 I	1,4-difluorobenzene	1.000	1.000	0.0	118	0.00	10.82
67 M	Di-isobutylene			-----NA-----			
68 M	tert amyl alcohol			-----NA-----			
69 M	epichlorohydrin	0.043	0.048	-11.6	132	0.00	12.06
70 M	n-butyl alcohol	0.013	0.016	-23.1#	145	0.00	10.91
71 M	tert-amyl ethyl ether			-----NA-----			
72 M	carbon tetrachloride	0.445	0.449	-0.9	114	0.00	10.27
73 M	1,1-dichloropropene	0.449	0.461	-2.7	116	0.00	10.23
74 M	hexane	0.481	0.478	0.6	129	0.00	8.47
75 M	benzene	1.275	1.342	-5.3	119	0.00	10.48
76 M	heptane	0.250	0.262	-4.8	132	0.00	10.68
77 M	isopropyl acetate	0.829	0.747	9.9	115	0.00	10.36
78 M	1,2-dichloroethane	0.514	0.478	7.0	109	0.00	10.45
79	ethyl acrylate			-----NA-----			
80 M	trichloroethene	0.339	0.352	-3.8	115	0.00	11.19
81 M	2-nitropropane			-----NA-----			
82 M	2-chloroethyl vinyl ether	0.251	0.237	5.6	114	0.00	11.95
83 M	methylcyclohexane	0.567	0.596	-5.1	136	0.00	11.45
84 M	methyl methacrylate	0.364	0.389	-6.9	126	0.00	11.43
85 M	1,2-dichloropropane	0.363	0.382	-5.2	121	0.00	11.43
86 M	dibromomethane	0.224	0.231	-3.1	114	0.00	11.59
87 M	bromodichloromethane	0.471	0.481	-2.1	114	0.00	11.72
88 M	cis-1,3-dichloropropene	0.569	0.631	-10.9	124	0.00	12.19
89 S	toluene-d8 (s)	1.282	1.195	6.8	115	0.00	12.52
90 M	4-methyl-2-pentanone	0.167	0.174	-4.2	123	0.00	12.28
91 M	toluene	0.813	0.858	-5.5	121	0.00	12.60
92 M	3-methyl-1-butanol	0.021	0.024	-14.3	136	0.00	12.28
93 M	trans-1,3-dichloropropene	0.523	0.559	-6.9	117	0.00	12.77
94 M	ethyl methacrylate	0.504	0.506	-0.4	119	0.00	12.77
95 M	1,1,2-trichloroethane	0.270	0.290	-7.4	122	0.00	13.00
96 M	2-hexanone	0.151	0.161	-6.6	125	0.00	13.18
97 I	chlorobenzene-d5	1.000	1.000	0.0	120	0.00	14.15
	----- True	Calc.	% Drift	-----			

6.9.7
6

Continuing Calibration Summary

Job Number: JB37539
 Account: AQTPAW Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VE8952-CC8922
 Lab FileID: E203692.D

Sample ID	Compound	500.000	395.278	20.9#	106	0.00	15.35
98 M	cyclohexanone						
		AvgRF	CCRF	% Dev			
99 M	tetrachloroethene	0.432	0.421	2.5	111	0.00	13.25
100 M	1,3-dichloropropane	0.583	0.619	-6.2	123	0.00	13.20
101 M	butyl acetate	0.264	0.288	-9.1	132	0.00	13.27
102 M	3,3-dimethyl-1-butanol	0.052	0.055	-5.8	130	0.00	13.36
103 M	dibromochloromethane	0.405	0.430	-6.2	122	0.00	13.49
104 M	1,2-dibromoethane	0.366	0.389	-6.3	120	0.00	13.66
105 M	n-butyl ether			NA			
106 M	chlorobenzene	0.947	1.024	-8.1	121	0.00	14.18
107 M	1,1,1,2-tetrachloroethane	0.374	0.378	-1.1	118	0.00	14.24
108 M	ethylbenzene	1.574	1.652	-5.0	118	0.00	14.25
		True	Calc.	% Drift			
109 M	m,p-xylene	100.000	100.098	-0.1	121	0.00	14.36
		AvgRF	CCRF	% Dev			
110 M	o-xylene	0.656	0.691	-5.3	122	0.00	14.82
111 M	butyl acrylate			NA			
112 M	styrene	1.079	1.137	-5.4	118	0.00	14.83
113 M	bromoform	0.308	0.320	-3.9	116	0.00	15.10
114 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	122	0.00	16.72
115 M	isopropylbenzene	3.032	3.202	-5.6	122	0.00	15.20
116 S	4-bromofluorobenzene (s)	0.954	0.889	6.8	116	0.00	15.42
117 M	bromobenzene	0.859	0.870	-1.3	118	0.00	15.64
118 M	1,1,2,2-tetrachloroethane	0.883	0.966	-9.4	127	0.00	15.50
119 M	trans-1,4-dichloro-2-bute	0.266	0.262	1.5	113	0.00	15.54
120 M	1,2,3-trichloropropane	0.241	0.260	-7.9	125	0.00	15.58
121 M	n-propylbenzene	3.464	3.510	-1.3	118	0.00	15.65
122 M	p-ethyltoluene			NA			
123 M	2-chlorotoluene	0.749	0.772	-3.1	119	0.00	15.82
124 M	4-chlorotoluene	2.194	2.326	-6.0	122	0.00	15.93
125 M	1,3,5-trimethylbenzene	2.450	2.657	-8.4	122	0.00	15.82
126 M	tert-butylbenzene	2.231	2.398	-7.5	124	0.00	16.21
127 M	pentachloroethane	0.505	0.554	-9.7	126	0.00	16.30
128 M	1,2,4-trimethylbenzene	2.622	2.689	-2.6	121	0.00	16.26
129 M	sec-butylbenzene	3.202	3.438	-7.4	122	0.00	16.45
130 M	1,3-dichlorobenzene	1.551	1.617	-4.3	121	0.00	16.66
131 M	p-isopropyltoluene	2.677	2.907	-8.6	123	0.00	16.58
132 M	1,4-dichlorobenzene	1.524	1.638	-7.5	122	0.00	16.75
133	benzyl chloride	1.597	1.700	-6.4	123	0.00	16.85
134 M	p-diethylbenzene			NA			
135 M	1,2-dichlorobenzene	1.521	1.625	-6.8	123	0.00	17.18
136 M	n-butylbenzene	1.427	1.474	-3.3	119	0.00	17.03
137 M	1,2,4,5-tetramethylbenzen			NA			
138 M	1,2-dibromo-3-chloropropa	0.176	0.202	-14.8	131	0.00	18.00
139 M	1,3,5-trichlorobenzene	1.257	1.375	-9.4	120	0.00	18.24
140 M	1,2,4-trichlorobenzene	1.116	1.217	-9.1	120	0.00	18.95
141 M	hexachlorobutadiene	0.590	0.630	-6.8	123	0.00	19.10
142 M	naphthalene	2.410	2.692	-11.7	126	0.00	19.26
143	MMT			NA			
144 M	1,2,3-trichlorobenzene	0.936	1.046	-11.8	124	0.00	19.54
145 M	hexachloroethane	0.543	0.567	-4.4	124	0.00	17.49
146 M	Cyclohexane	0.959	1.007	-5.0	127	0.00	10.16
147	ethyleinimine			NA			

6.9.7

6

Continuing Calibration Summary

Job Number: JB37539

Sample: VE8952-CC8922

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: E203692.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

(#) = Out of Range
E202998.D ME8922.M

SPCC's out = 0 CCC's out = 0
Wed May 29 15:37:44 2013 RPT1

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
 Data File : 3C98892.D
 Acq On : 24 May 2013 12:56 am
 Operator : juntaep
 Sample : jB37539-1
 Misc : MS48715,V3C4392,5.8,,,,,1
 ALS Vial : 35 Sample Multiplier: 1

Quant Time: May 24 12:15:14 2013
 Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Wed May 15 14:18:43 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.366	65	53546	500.00	ug/L	0.00
5) pentafluorobenzene	9.594	168	195701	50.00	ug/L	0.00
53) 1,4-difluorobenzene	10.510	114	287075	50.00	ug/L	0.00
82) chlorobenzene-d5	13.637	117	232922	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	15.933	152	98984	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	9.652	113	80221	46.90	ug/L	0.00
Spiked Amount	50.000	Range 70 - 130	Recovery	=	93.80%	
45) 1,2-dichloroethane-d4 (s)	10.070	65	72989	42.34	ug/L	0.00
Spiked Amount	50.000	Range 70 - 122	Recovery	=	84.68%	
74) toluene-d8 (s)	12.142	98	340804	47.53	ug/L	0.00
Spiked Amount	50.000	Range 81 - 127	Recovery	=	95.06%	
99) 4-bromofluorobenzene (s)	14.778	95	111206	50.09	ug/L	0.00
Spiked Amount	50.000	Range 66 - 132	Recovery	=	100.18%	

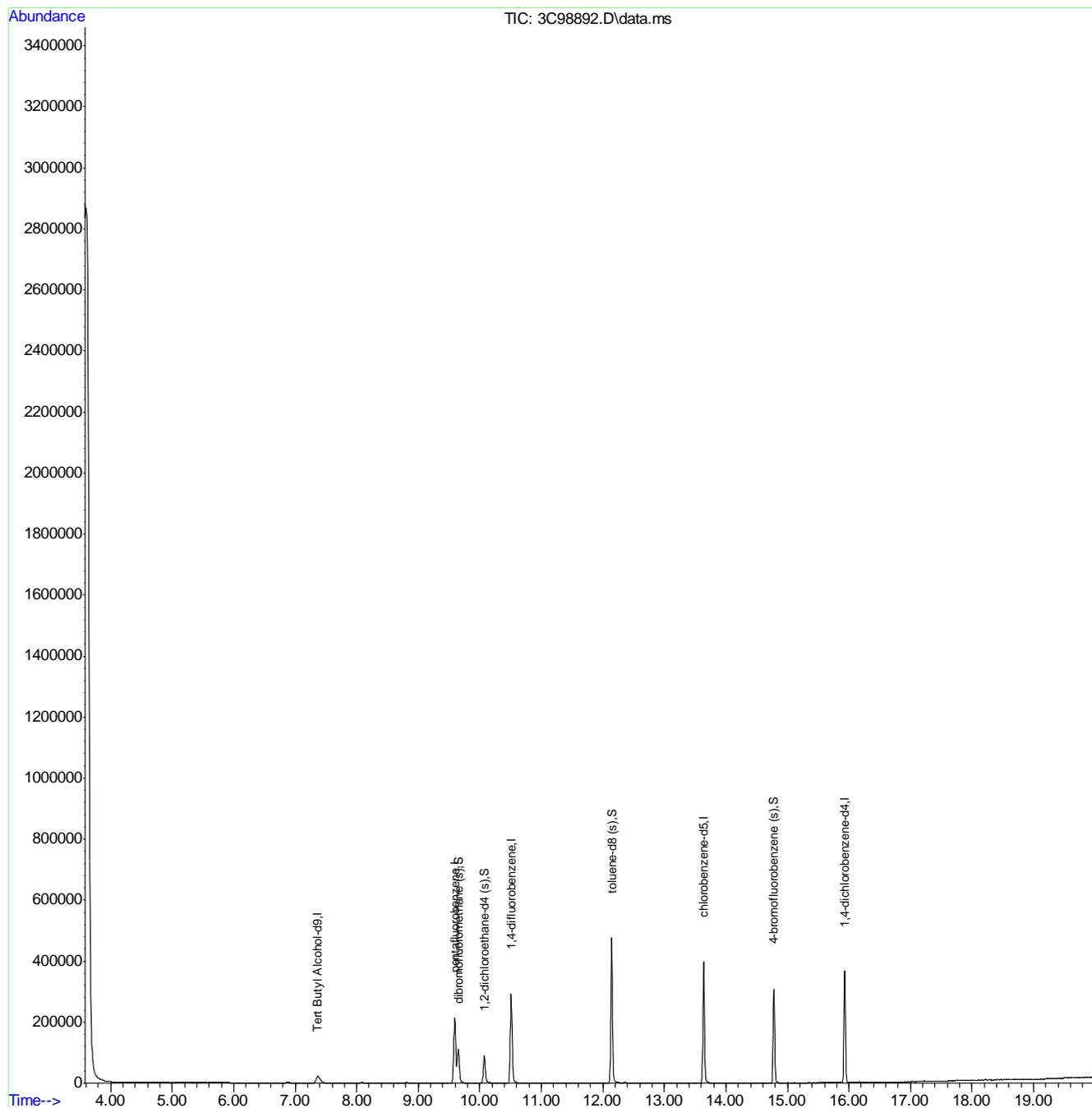
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
Data File : 3C98892.D
Acq On : 24 May 2013 12:56 am
Operator : juntaep
Sample : jb37539-1
Misc : MS48715,V3C4392,5.8,,,,1
ALS Vial : 35 Sample Multiplier: 1

Quant Time: May 24 12:15:14 2013
Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Wed May 15 14:18:43 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
 Data File : E203708.D
 Acq On : 29 May 2013 6:25 am
 Operator : Oksanat
 Sample : jB37539-2
 Misc : MS48715,VE8952,6.8,,100,10,1
 ALS Vial : 44 Sample Multiplier: 1

Quant Time: May 29 15:53:41 2013
 Quant Method : C:\MSDCHEM\1\METHODS\ME8922.M
 Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri May 10 15:40:15 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.718	65	103991	500.00	ug/L	0.03
5) pentafluorobenzene	9.904	168	186313	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.820	114	260127	50.00	ug/L	0.00
97) chlorobenzene-d5	14.146	117	220363	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.719	152	121350	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.946	113	74739	42.58	ug/L	0.00
Spiked Amount	50.000	Range 81 - 121	Recovery	=	85.16%	
61) 1,2-dichloroethane-d4 (s)	10.359	65	93002	40.60	ug/L	0.00
Spiked Amount	50.000	Range 74 - 127	Recovery	=	81.20%	
89) toluene-d8 (s)	12.519	98	305774	45.83	ug/L	0.00
Spiked Amount	50.000	Range 80 - 122	Recovery	=	91.66%	
116) 4-bromofluorobenzene (s)	15.417	95	128978	55.70	ug/L	0.00
Spiked Amount	50.000	Range 78 - 116	Recovery	=	111.40%	

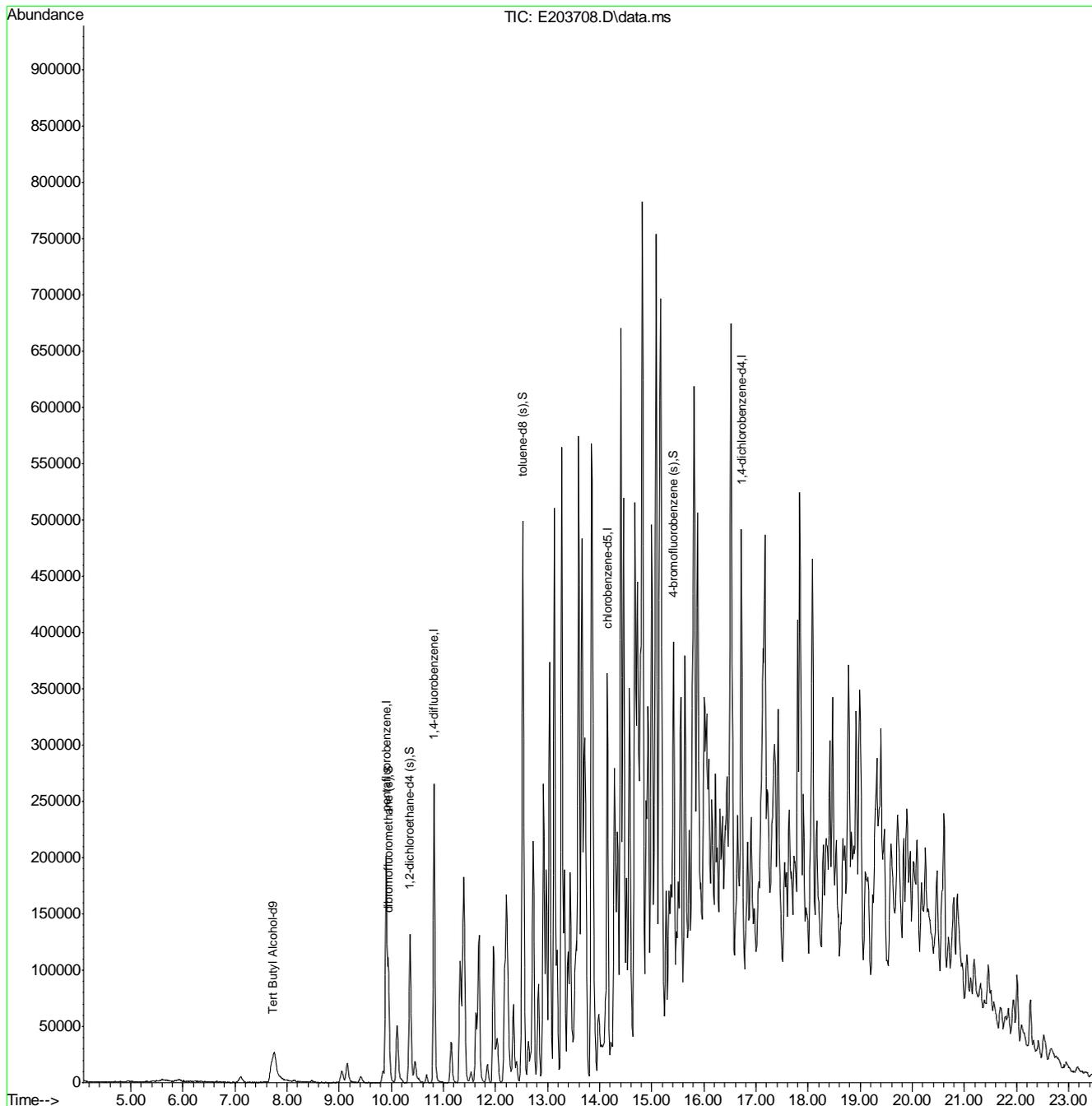
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
 Data File : E203708.D
 Acq On : 29 May 2013 6:25 am
 Operator : Oksanat
 Sample : jB37539-2
 Misc : MS48715,VE8952,6.8,,100,10,1
 ALS Vial : 44 Sample Multiplier: 1

Quant Time: May 29 15:53:41 2013
 Quant Method : C:\MSDCHEM\1\METHODS\ME8922.M
 Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri May 10 15:40:15 2013
 Response via : Initial Calibration



7.1.2
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
 Data File : 3C98893.D
 Acq On : 24 May 2013 1:26 am
 Operator : juntaep
 Sample : jb37539-3
 Misc : MS48715,V3C4392,5.4,,,,,1
 ALS Vial : 36 Sample Multiplier: 1

Quant Time: May 24 12:15:43 2013
 Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Wed May 15 14:18:43 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.372	65	60343	500.00	ug/L	0.00
5) pentafluorobenzene	9.595	168	191711	50.00	ug/L	0.00
53) 1,4-difluorobenzene	10.510	114	282908	50.00	ug/L	0.00
82) chlorobenzene-d5	13.638	117	229156	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	15.928	152	97751	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	9.647	113	79720	47.58	ug/L	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	95.16%
45) 1,2-dichloroethane-d4 (s)	10.071	65	73380	43.45	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	86.90%
74) toluene-d8 (s)	12.142	98	335245	47.45	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	94.90%
99) 4-bromofluorobenzene (s)	14.778	95	107755	49.15	ug/L	0.00
Spiked Amount	50.000	Range	66 - 132	Recovery	=	98.30%

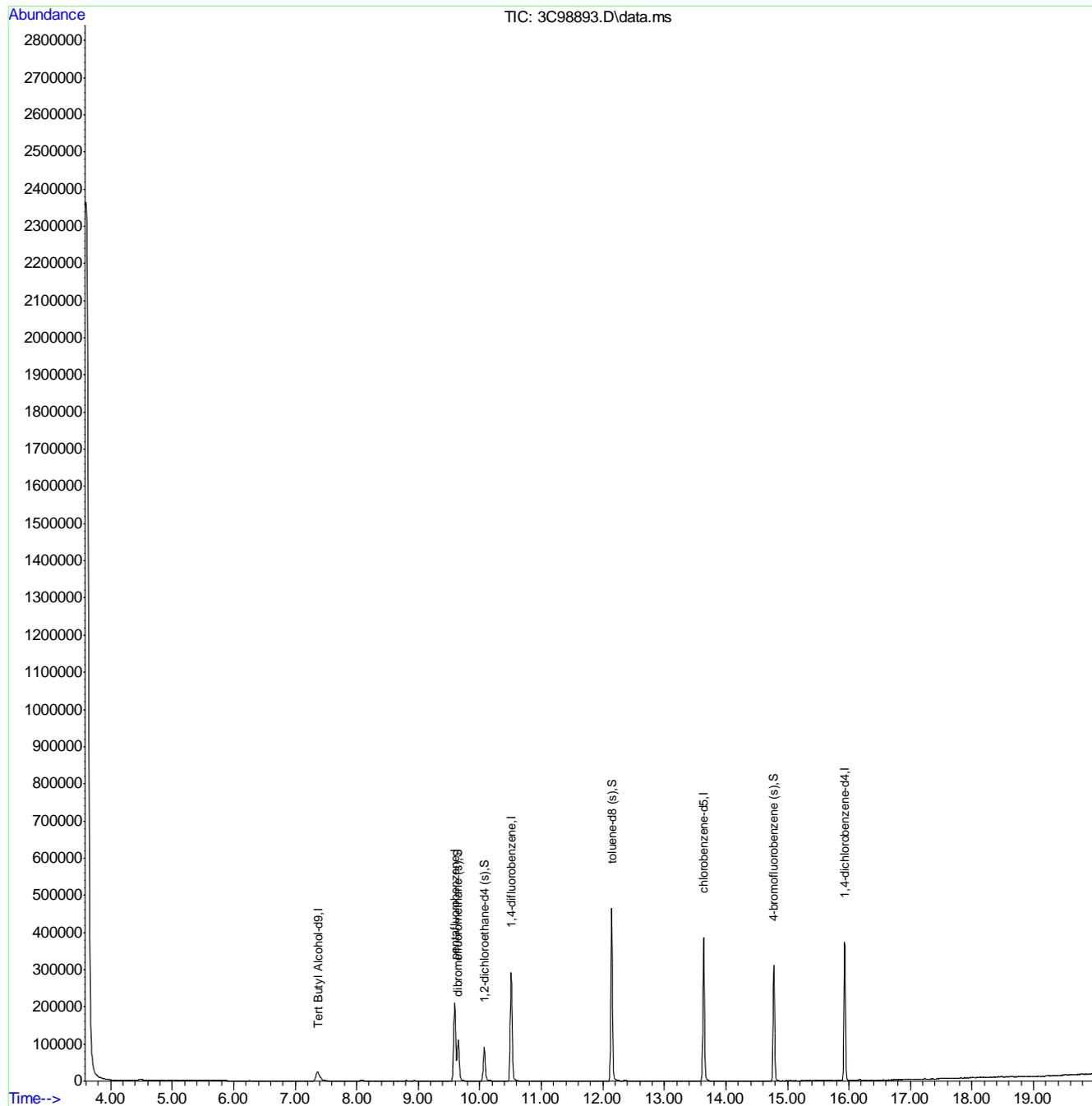
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
Data File : 3C98893.D
Acq On : 24 May 2013 1:26 am
Operator : juntaep
Sample : jb37539-3
Misc : MS48715,V3C4392,5.4,,,,,1
ALS Vial : 36 Sample Multiplier: 1

Quant Time: May 24 12:15:43 2013
Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Wed May 15 14:18:43 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
 Data File : 3C98894.D
 Acq On : 24 May 2013 1:55 am
 Operator : juntaep
 Sample : jB37539-4
 Misc : MS48715,V3C4392,6.3,,,,,1
 ALS Vial : 37 Sample Multiplier: 1

Quant Time: May 24 12:17:18 2013
 Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Wed May 15 14:18:43 2013
 Response via : Initial Calibration

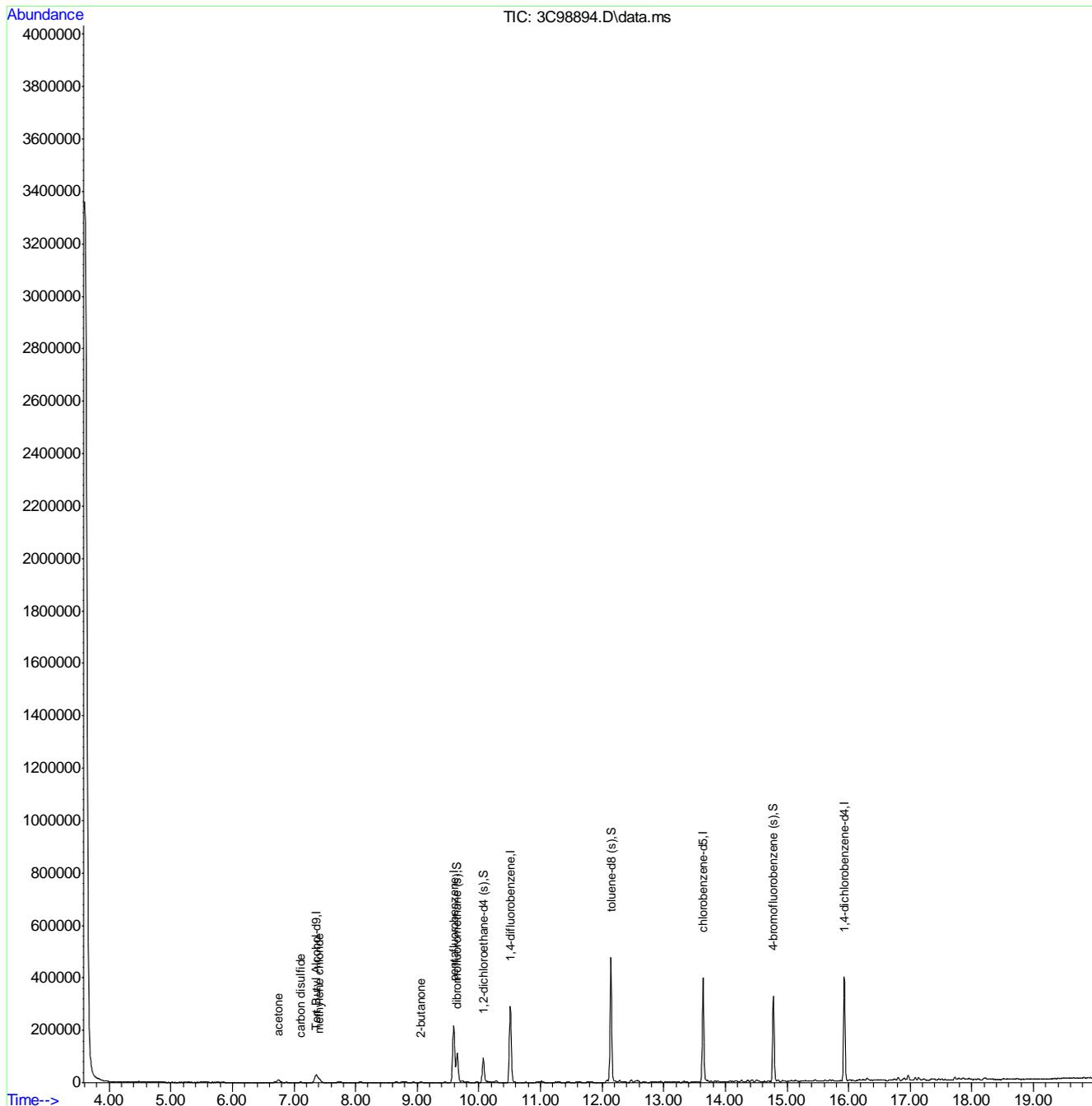
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.367	65	59560	500.00	ug/L	0.00
5) pentafluorobenzene	9.589	168	197585	50.00	ug/L	-0.01
53) 1,4-difluorobenzene	10.510	114	288352	50.00	ug/L	0.00
82) chlorobenzene-d5	13.638	117	238283	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	15.928	152	105494	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	9.647	113	80441	46.58	ug/L	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	93.16%
45) 1,2-dichloroethane-d4 (s)	10.071	65	74348	42.72	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	85.44%
74) toluene-d8 (s)	12.142	98	344133	47.79	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	95.58%
99) 4-bromofluorobenzene (s)	14.778	95	111964	47.32	ug/L	0.00
Spiked Amount	50.000	Range	66 - 132	Recovery	=	94.64%
Target Compounds						
18) acetone	6.749	58	7812	69.63	ug/L	91
23) carbon disulfide	7.100	76	4194	0.66	ug/L	88
24) methylene chloride	7.408	84	4653	2.34	ug/L	91
30) 2-butanone	9.056	72	1313	8.41	ug/L #	1

(#) = qualifier out of range (m) = manual integration (+) = signals summed

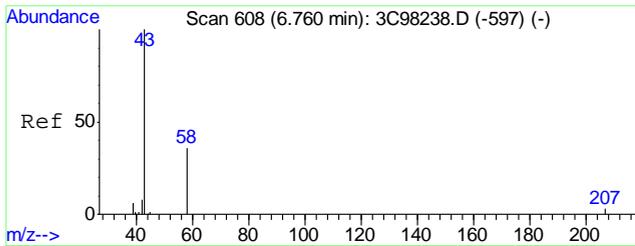
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
 Data File : 3C98894.D
 Acq On : 24 May 2013 1:55 am
 Operator : juntaep
 Sample : jB37539-4
 Misc : MS48715,V3C4392,6.3,,,,,1
 ALS Vial : 37 Sample Multiplier: 1

Quant Time: May 24 12:17:18 2013
 Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Wed May 15 14:18:43 2013
 Response via : Initial Calibration

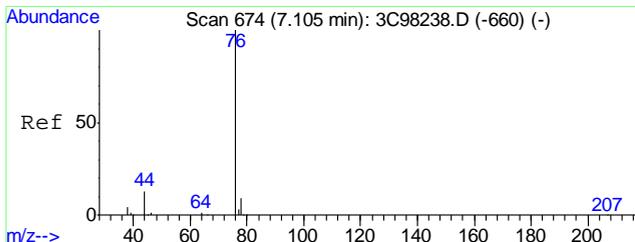
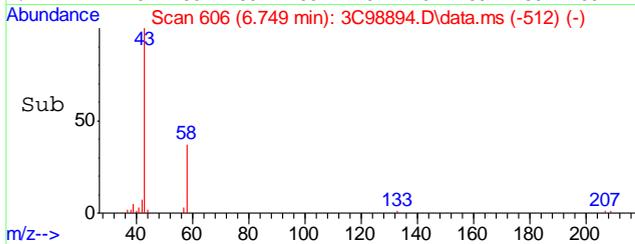
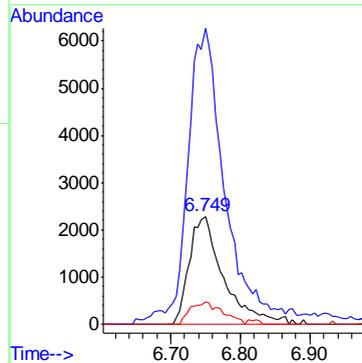
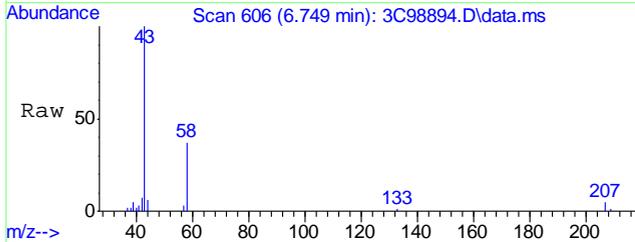


7.1.4
7



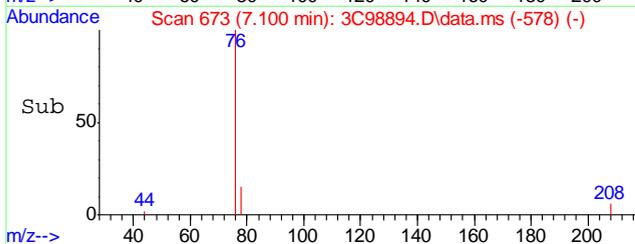
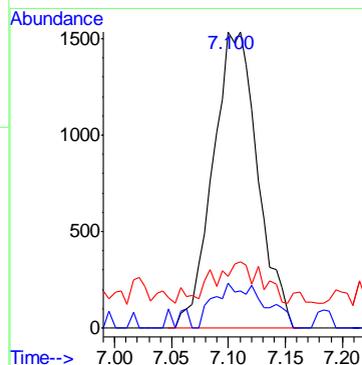
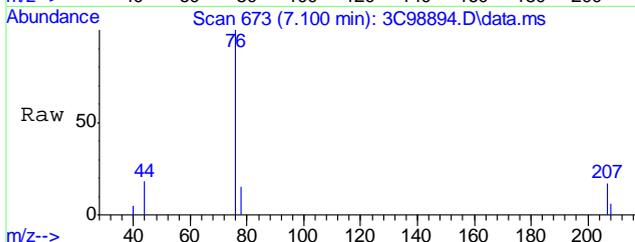
#18
 acetone
 Concen: 69.63 ug/L
 RT: 6.749 min Scan# 606
 Delta R.T. -0.011 min
 Lab File: 3C98894.D
 Acq: 24 May 2013 1:55 am

Tgt Ion	Resp	Lower	Upper
58	7812		
43	273.8	259.1	319.1
42	20.5	0.0	57.9

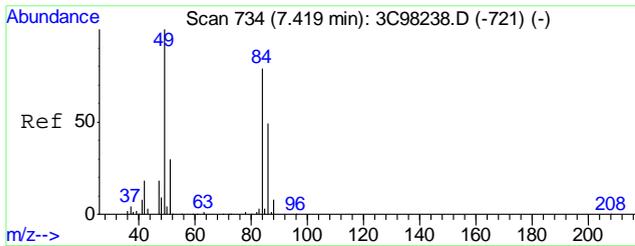


#23
 carbon disulfide
 Concen: 0.66 ug/L
 RT: 7.100 min Scan# 673
 Delta R.T. -0.005 min
 Lab File: 3C98894.D
 Acq: 24 May 2013 1:55 am

Tgt Ion	Resp	Lower	Upper
76	4194		
78	11.8	0.0	39.3
44	6.4	0.0	42.5

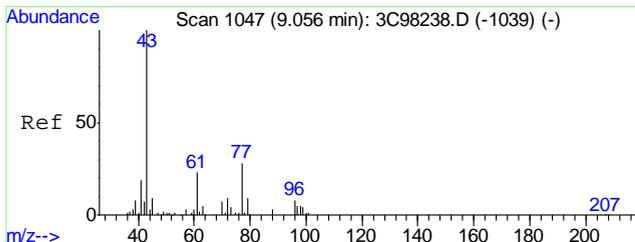
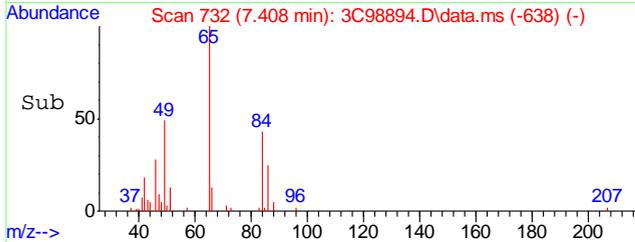
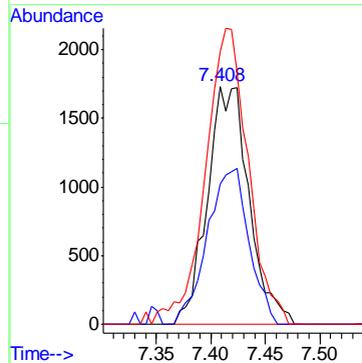
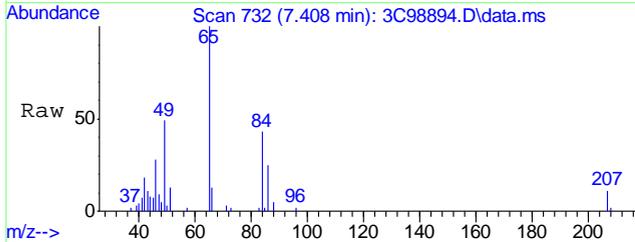


7.14
 7



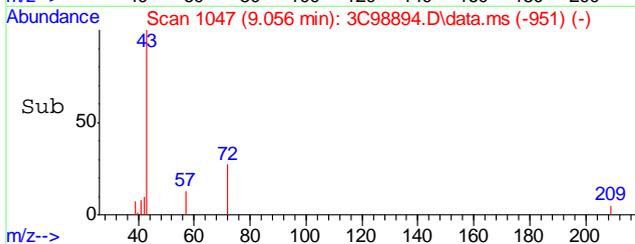
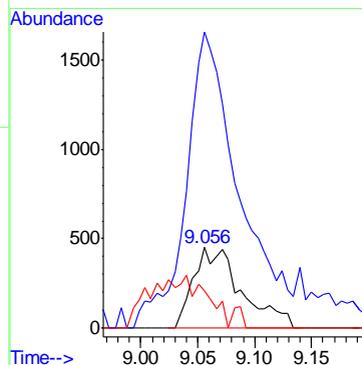
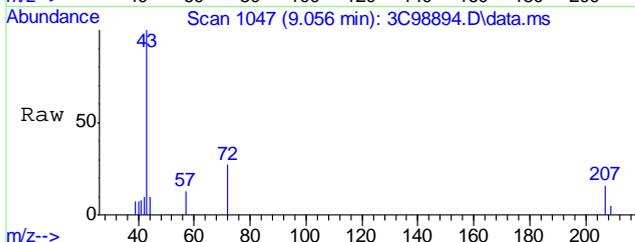
#24
 methylene chloride
 Concen: 2.34 ug/L
 RT: 7.408 min Scan# 732
 Delta R.T. -0.011 min
 Lab File: 3C98894.D
 Acq: 24 May 2013 1:55 am

Tgt Ion	Resp	Lower	Upper
84	4653		
84	100		
86	59.0	43.6	81.0
49	114.5	89.0	165.2



#30
 2-butanone
 Concen: 8.41 ug/L
 RT: 9.056 min Scan# 1047
 Delta R.T. -0.000 min
 Lab File: 3C98894.D
 Acq: 24 May 2013 1:55 am

Tgt Ion	Resp	Lower	Upper
72	1313		
72	100		
43	465.9	859.8	1596.8#
57	76.5	20.2	37.4#



7.14
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
 Data File : 3C98895.D
 Acq On : 24 May 2013 2:25 am
 Operator : juntaep
 Sample : jB37539-5
 Misc : MS48715,V3C4392,6.2,,,,,1
 ALS Vial : 38 Sample Multiplier: 1

Quant Time: May 24 12:17:52 2013
 Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Wed May 15 14:18:43 2013
 Response via : Initial Calibration

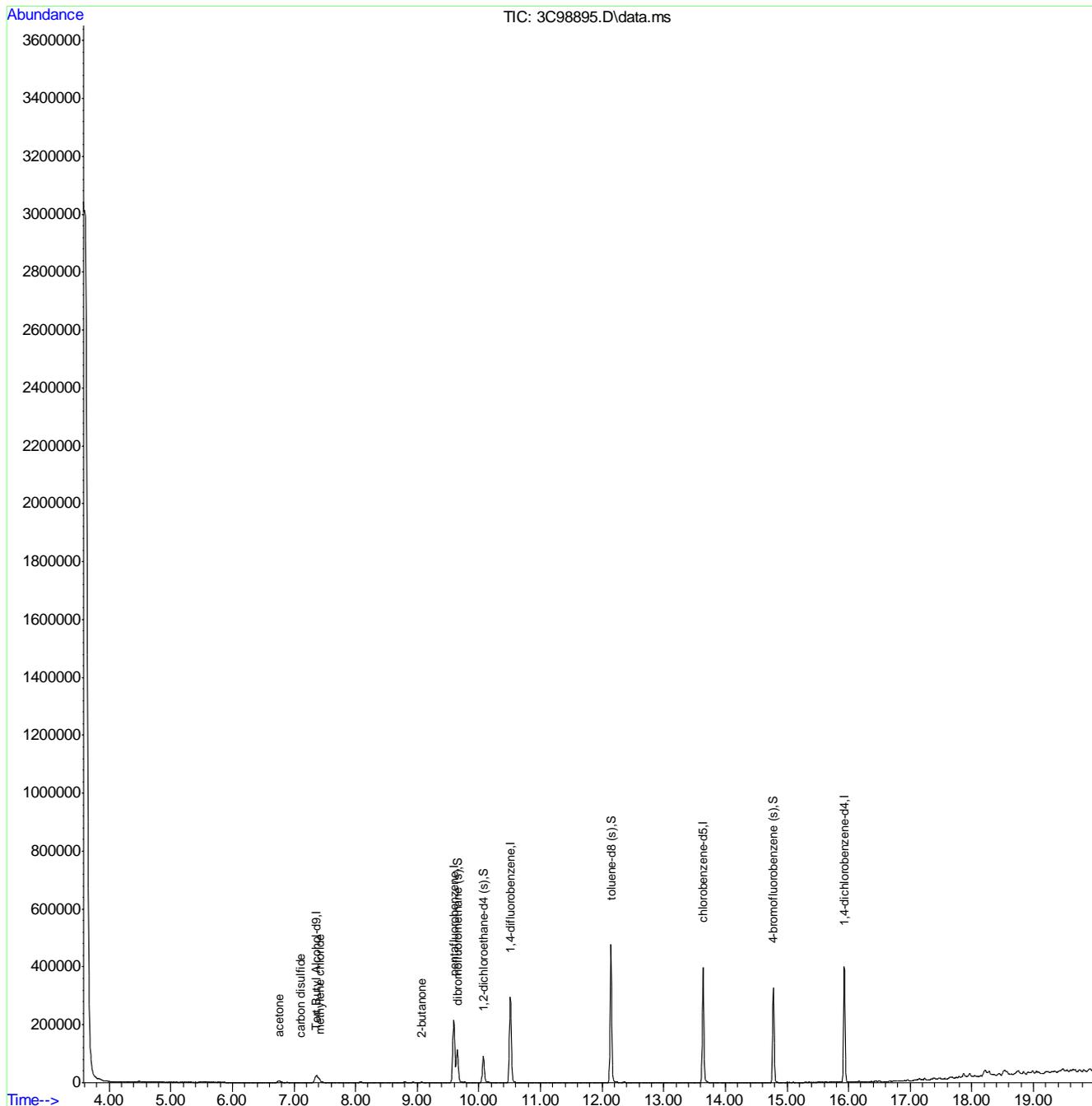
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.366	65	58086	500.00	ug/L	0.00
5) pentafluorobenzene	9.594	168	195249	50.00	ug/L	0.00
53) 1,4-difluorobenzene	10.510	114	291448	50.00	ug/L	0.00
82) chlorobenzene-d5	13.637	117	235232	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	15.934	152	104603	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	9.652	113	80357	47.09	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	94.18%
45) 1,2-dichloroethane-d4 (s)	10.070	65	72662	42.25	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	84.50%
74) toluene-d8 (s)	12.142	98	340988	46.85	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	93.70%
99) 4-bromofluorobenzene (s)	14.778	95	113280	48.29	ug/L	0.00
Spiked Amount	50.000	Range	66 - 132	Recovery	=	96.58%
Target Compounds						
18) acetone	6.754	58	4934	44.50	ug/L	96
23) carbon disulfide	7.105	76	1353	0.22	ug/L	93
24) methylene chloride	7.413	84	3298	1.68	ug/L	82
30) 2-butanone	9.071	72	781	5.06	ug/L #	1

(#) = qualifier out of range (m) = manual integration (+) = signals summed

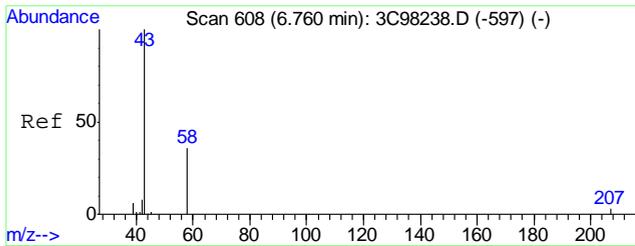
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
 Data File : 3C98895.D
 Acq On : 24 May 2013 2:25 am
 Operator : juntaep
 Sample : jb37539-5
 Misc : MS48715,V3C4392,6.2,,,,,1
 ALS Vial : 38 Sample Multiplier: 1

Quant Time: May 24 12:17:52 2013
 Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Wed May 15 14:18:43 2013
 Response via : Initial Calibration

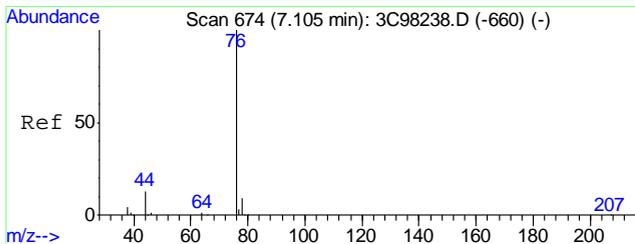
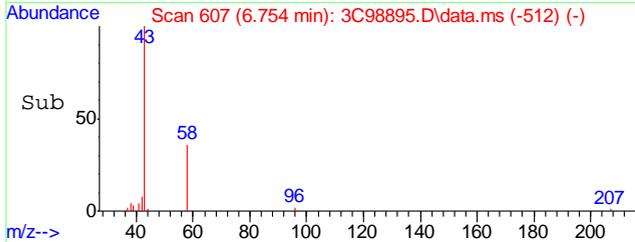
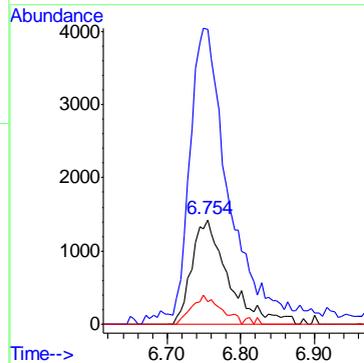
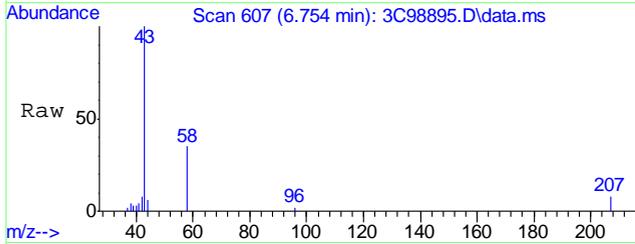


7.15
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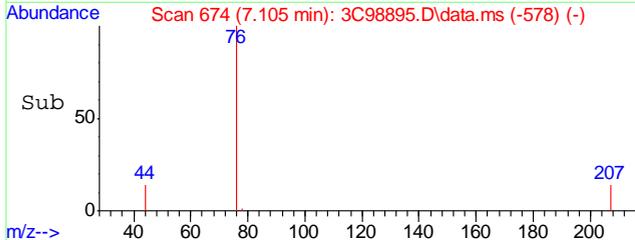
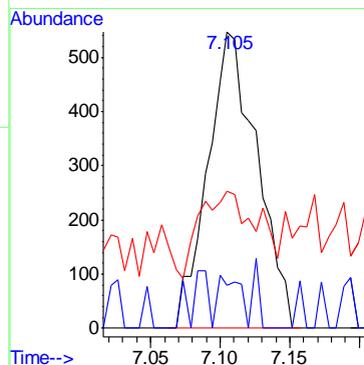
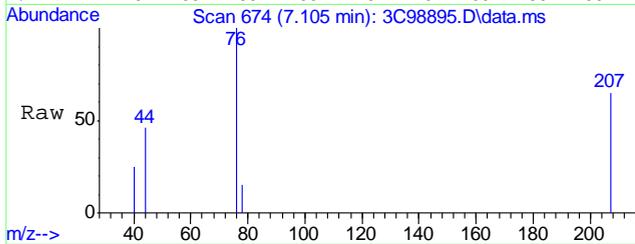
#18
 acetone
 Concen: 44.50 ug/L
 RT: 6.754 min Scan# 607
 Delta R.T. -0.005 min
 Lab File: 3C98895.D
 Acq: 24 May 2013 2:25 am

Tgt Ion	Resp	Lower	Upper
58	4934		
58	100		
43	282.5	259.1	319.1
42	22.1	0.0	57.9

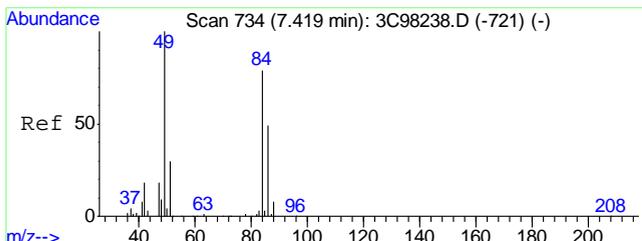


#23
 carbon disulfide
 Concen: 0.22 ug/L
 RT: 7.105 min Scan# 674
 Delta R.T. -0.000 min
 Lab File: 3C98895.D
 Acq: 24 May 2013 2:25 am

Tgt Ion	Resp	Lower	Upper
76	1353		
76	100		
78	6.6	0.0	39.3
44	15.3	0.0	42.5

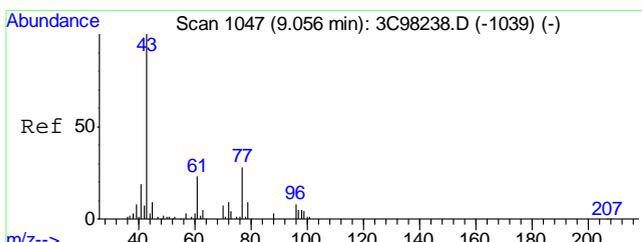
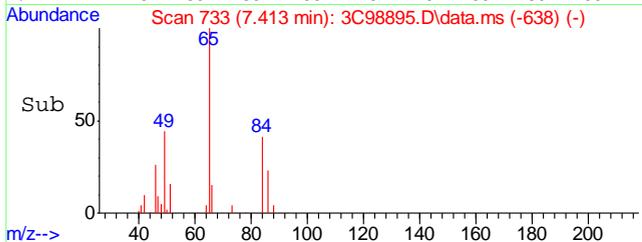
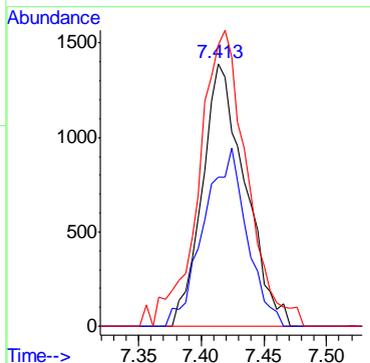
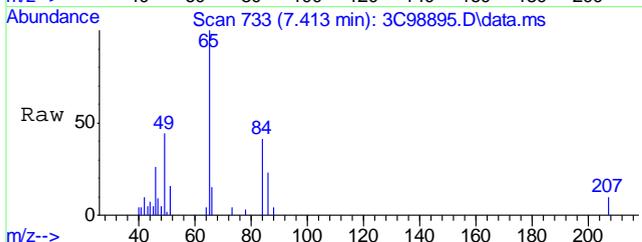


7.15
7



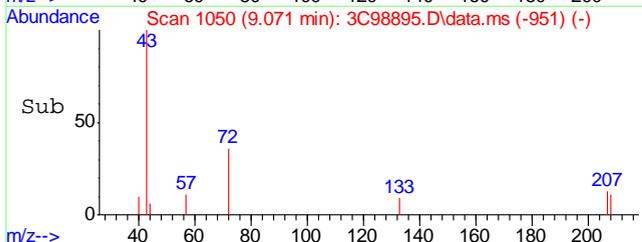
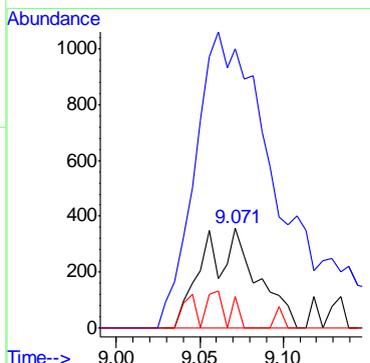
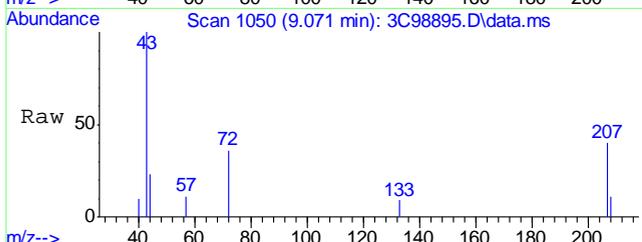
#24
 methylene chloride
 Concen: 1.68 ug/L
 RT: 7.413 min Scan# 733
 Delta R.T. -0.005 min
 Lab File: 3C98895.D
 Acq: 24 May 2013 2:25 am

Tgt Ion	Resp	Lower	Upper
84	3298		
84	100		
86	56.9	43.6	81.0
49	99.6	89.0	165.2



#30
 2-butanone
 Concen: 5.06 ug/L
 RT: 9.071 min Scan# 1050
 Delta R.T. 0.015 min
 Lab File: 3C98895.D
 Acq: 24 May 2013 2:25 am

Tgt Ion	Resp	Lower	Upper
72	781		
72	100		
43	534.3	859.8	1596.8#
57	14.6	20.2	37.4#



7.15
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
 Data File : E203709.D
 Acq On : 29 May 2013 6:55 am
 Operator : Oksanat
 Sample : jB37539-6
 Misc : MS48715,VE8952,6.0,,100,10,1
 ALS Vial : 45 Sample Multiplier: 1

Quant Time: May 29 15:55:03 2013
 Quant Method : C:\MSDCHEM\1\METHODS\ME8922.M
 Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri May 10 15:40:15 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.703	65	101773	500.00	ug/L	0.01
5) pentafluorobenzene	9.905	168	188236	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.820	114	261361	50.00	ug/L	0.00
97) chlorobenzene-d5	14.147	117	238004	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.720	152	132648	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.947	113	76154	42.94	ug/L	0.00
Spiked Amount	50.000	Range 81 - 121	Recovery	=	85.88%	
61) 1,2-dichloroethane-d4 (s)	10.360	65	95033	41.06	ug/L	0.00
Spiked Amount	50.000	Range 74 - 127	Recovery	=	82.12%	
89) toluene-d8 (s)	12.520	98	310355	46.30	ug/L	0.00
Spiked Amount	50.000	Range 80 - 122	Recovery	=	92.60%	
116) 4-bromofluorobenzene (s)	15.418	95	116422	45.99	ug/L	0.00
Spiked Amount	50.000	Range 78 - 116	Recovery	=	91.98%	

Target Compounds

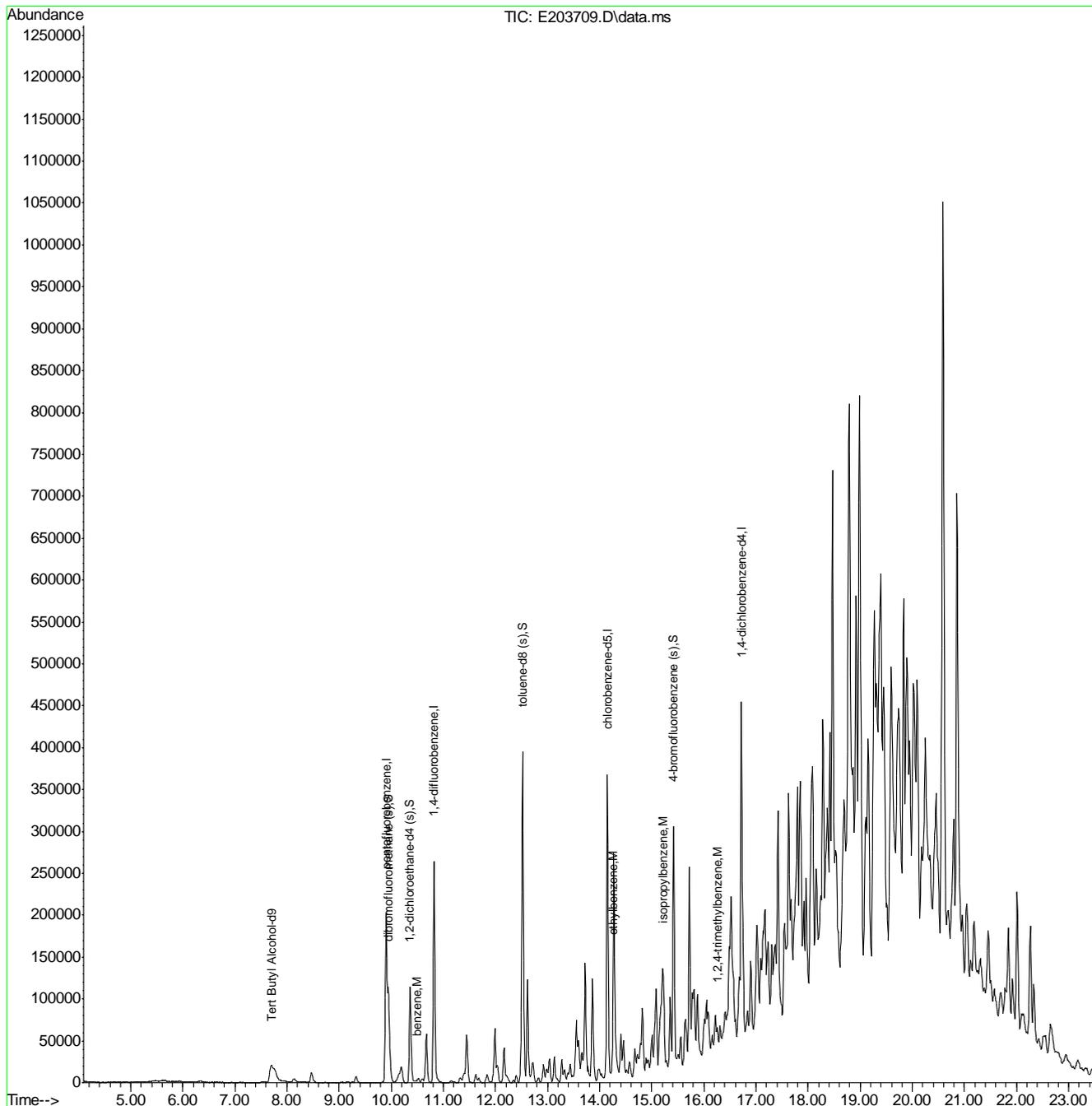
						Qvalue
75) benzene	10.480	78	1825	0.27	ug/L	93
108) ethylbenzene	14.251	91	13701	1.83	ug/L	94
115) isopropylbenzene	15.203	105	10458	1.30	ug/L	98
128) 1,2,4-trimethylbenzene	16.265	105	6132	0.88	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

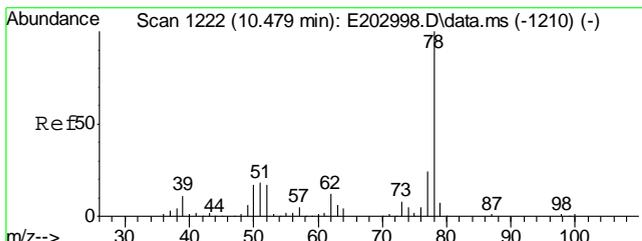
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
 Data File : E203709.D
 Acq On : 29 May 2013 6:55 am
 Operator : Oksanat
 Sample : jB37539-6
 Misc : MS48715,VE8952,6.0,,100,10,1
 ALS Vial : 45 Sample Multiplier: 1

Quant Time: May 29 15:55:03 2013
 Quant Method : C:\MSDCHEM\1\METHODS\ME8922.M
 Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri May 10 15:40:15 2013
 Response via : Initial Calibration

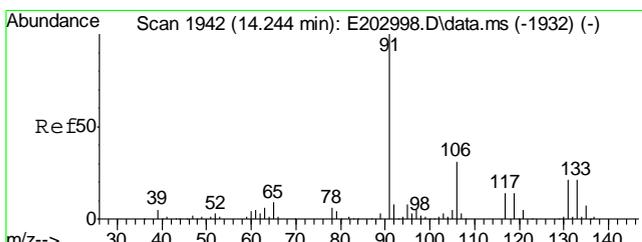
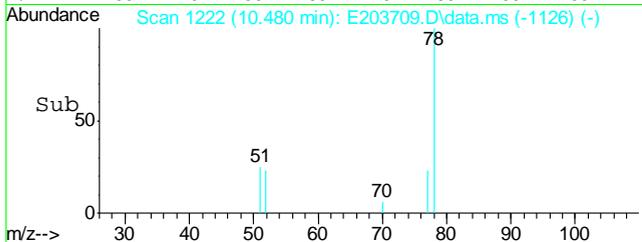
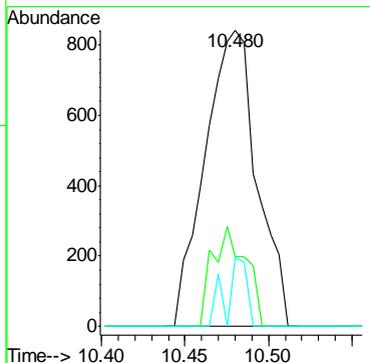
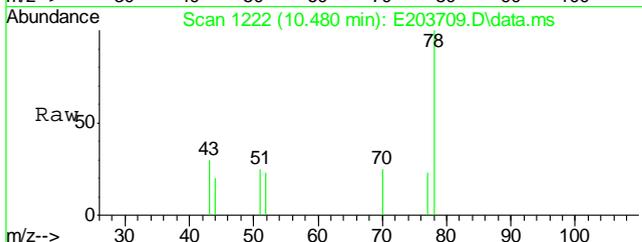


7.1.6
7



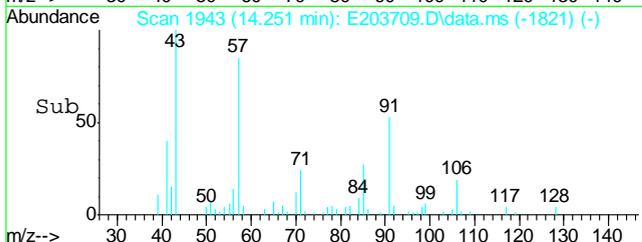
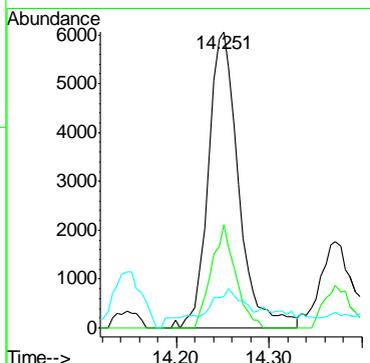
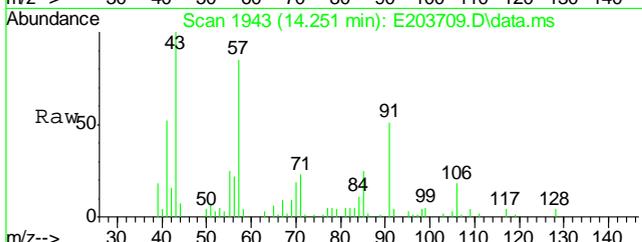
#75
benzene
Concen: 0.27 ug/L
RT: 10.480 min Scan# 1222
Delta R.T. 0.002 min
Lab File: E203709.D
Acq: 29 May 2013 6:55 am

Tgt Ion	Resp	Lower	Upper
78	1825	100	
77	23.4	0.0	53.9
52	23.3	0.0	46.9

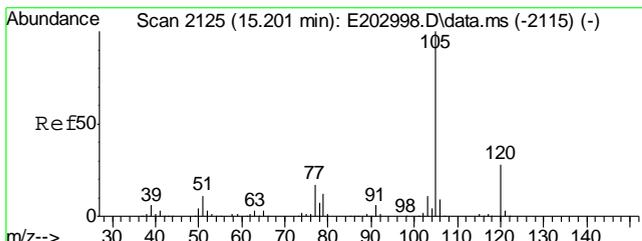


#108
ethylbenzene
Concen: 1.83 ug/L
RT: 14.251 min Scan# 1943
Delta R.T. 0.007 min
Lab File: E203709.D
Acq: 29 May 2013 6:55 am

Tgt Ion	Resp	Lower	Upper
91	13701	100	
106	34.9	0.9	60.9
77	7.6	0.0	38.6

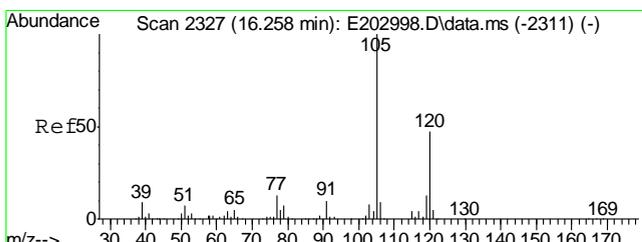
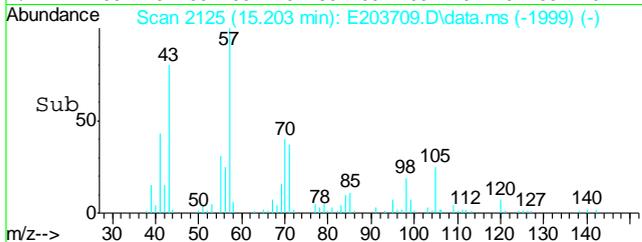
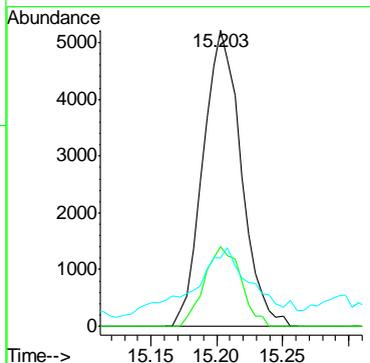
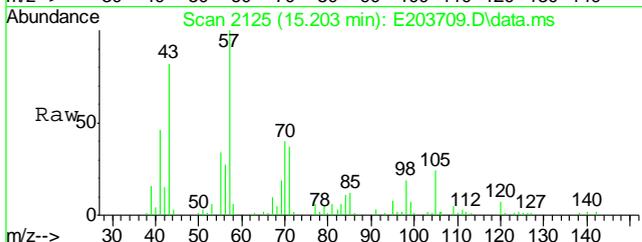


7.1.6
7



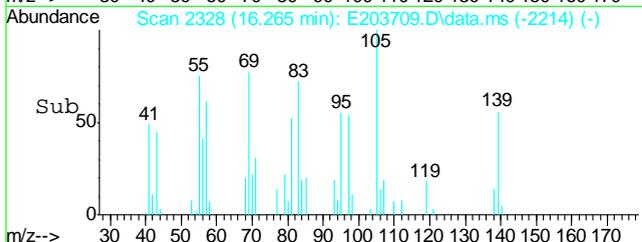
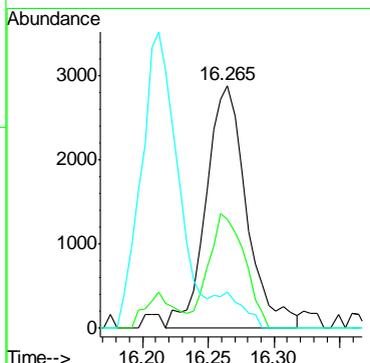
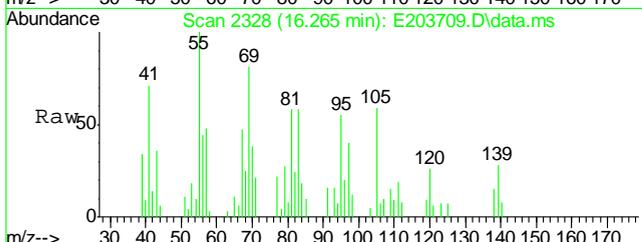
#115
 isopropylbenzene
 Concen: 1.30 ug/L
 RT: 15.203 min Scan# 2125
 Delta R.T. 0.002 min
 Lab File: E203709.D
 Acq: 29 May 2013 6:55 am

Tgt Ion	Ratio	Lower	Upper
105	100		
120	26.9	0.0	57.6
77	17.6	0.0	46.7



#128
 1,2,4-trimethylbenzene
 Concen: 0.88 ug/L
 RT: 16.265 min Scan# 2328
 Delta R.T. 0.007 min
 Lab File: E203709.D
 Acq: 29 May 2013 6:55 am

Tgt Ion	Ratio	Lower	Upper
105	100		
120	44.8	17.3	77.3
119	15.0	0.0	43.4



7.16
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
 Data File : 3C98884.D
 Acq On : 23 May 2013 9:00 pm
 Operator : juntaep
 Sample : mb
 Misc : MS48716,V3C4392,5.0,,,,,1
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: May 24 12:11:16 2013
 Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Wed May 15 14:18:43 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.366	65	45142	500.00	ug/L	0.00
5) pentafluorobenzene	9.595	168	199050	50.00	ug/L	0.00
53) 1,4-difluorobenzene	10.510	114	285577	50.00	ug/L	0.00
82) chlorobenzene-d5	13.637	117	228527	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	15.928	152	98800	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	9.652	113	76995	44.26	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	88.52%
45) 1,2-dichloroethane-d4 (s)	10.070	65	65530	37.37	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	74.74%
74) toluene-d8 (s)	12.142	98	340340	47.72	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	95.44%
99) 4-bromofluorobenzene (s)	14.778	95	107850	48.67	ug/L	0.00
Spiked Amount	50.000	Range	66 - 132	Recovery	=	97.34%

Target Compounds Qvalue

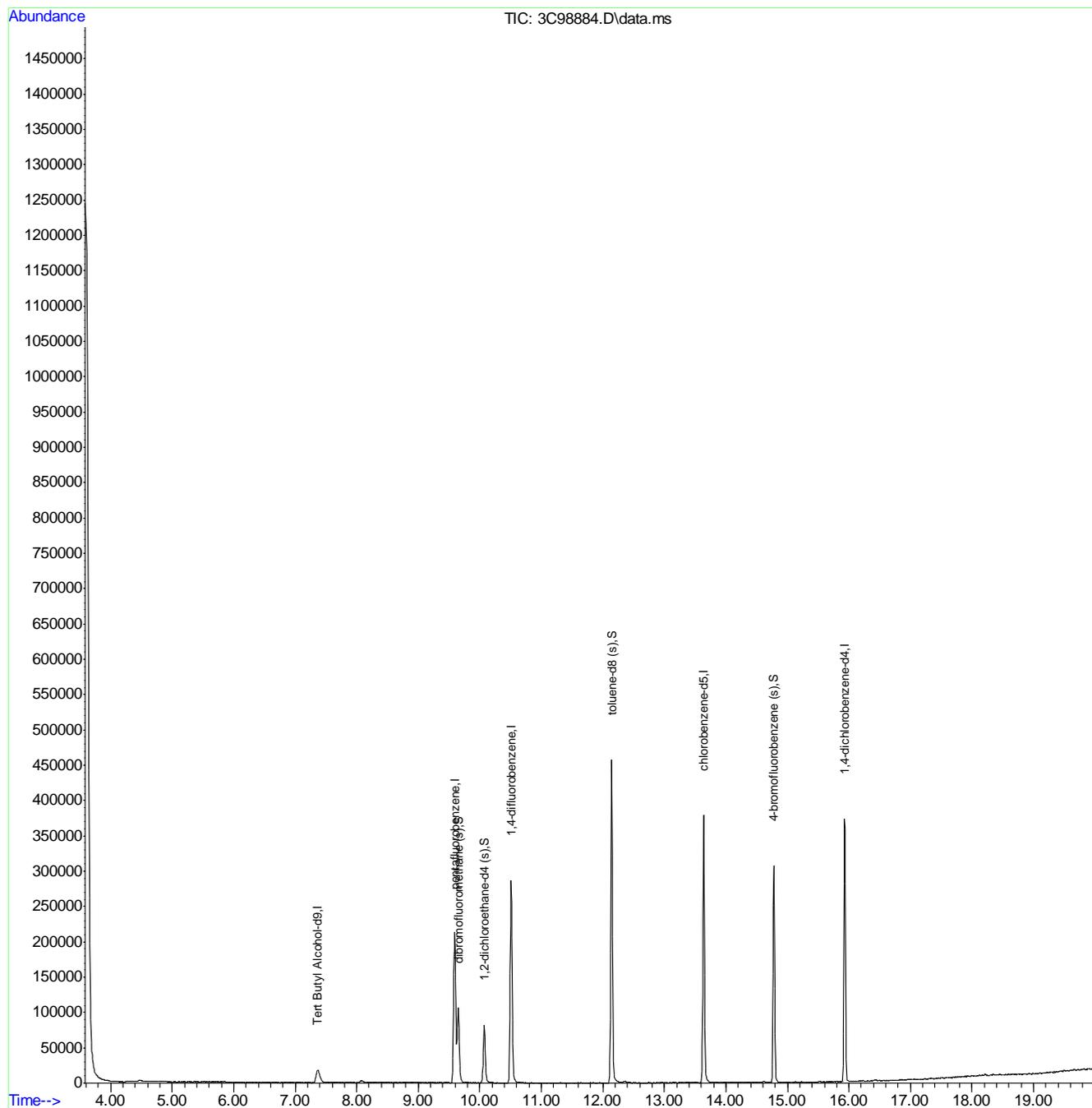
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.2.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\V3C4390-91\
Data File : 3C98884.D
Acq On : 23 May 2013 9:00 pm
Operator : juntaep
Sample : mb
Misc : MS48716,V3C4392,5.0,,,,1
ALS Vial : 27 Sample Multiplier: 1

Quant Time: May 24 12:11:16 2013
Quant Method : C:\MSDCHEM\1\METHODS\M3C4359.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Wed May 15 14:18:43 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
 Data File : E203694.D
 Acq On : 28 May 2013 11:26 pm
 Operator : Oksanat
 Sample : mb
 Misc : MS48600,VE8952,5,,100,5,1
 ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 29 15:38:35 2013
 Quant Method : C:\MSDCHEM\1\METHODS\ME8922.M
 Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri May 10 15:40:15 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.717	65	107173	500.00	ug/L	0.03
5) pentafluorobenzene	9.898	168	185007	50.00	ug/L	-0.01
66) 1,4-difluorobenzene	10.819	114	259729	50.00	ug/L	0.00
97) chlorobenzene-d5	14.145	117	238822	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.718	152	135712	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.945	113	75219	43.15	ug/L	0.00
Spiked Amount	50.000	Range 81 - 121	Recovery	=	86.30%	
61) 1,2-dichloroethane-d4 (s)	10.358	65	96743	42.53	ug/L	0.00
Spiked Amount	50.000	Range 74 - 127	Recovery	=	85.06%	
89) toluene-d8 (s)	12.519	98	308398	46.30	ug/L	0.00
Spiked Amount	50.000	Range 80 - 122	Recovery	=	92.60%	
116) 4-bromofluorobenzene (s)	15.416	95	120325	46.46	ug/L	0.00
Spiked Amount	50.000	Range 78 - 116	Recovery	=	92.92%	

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

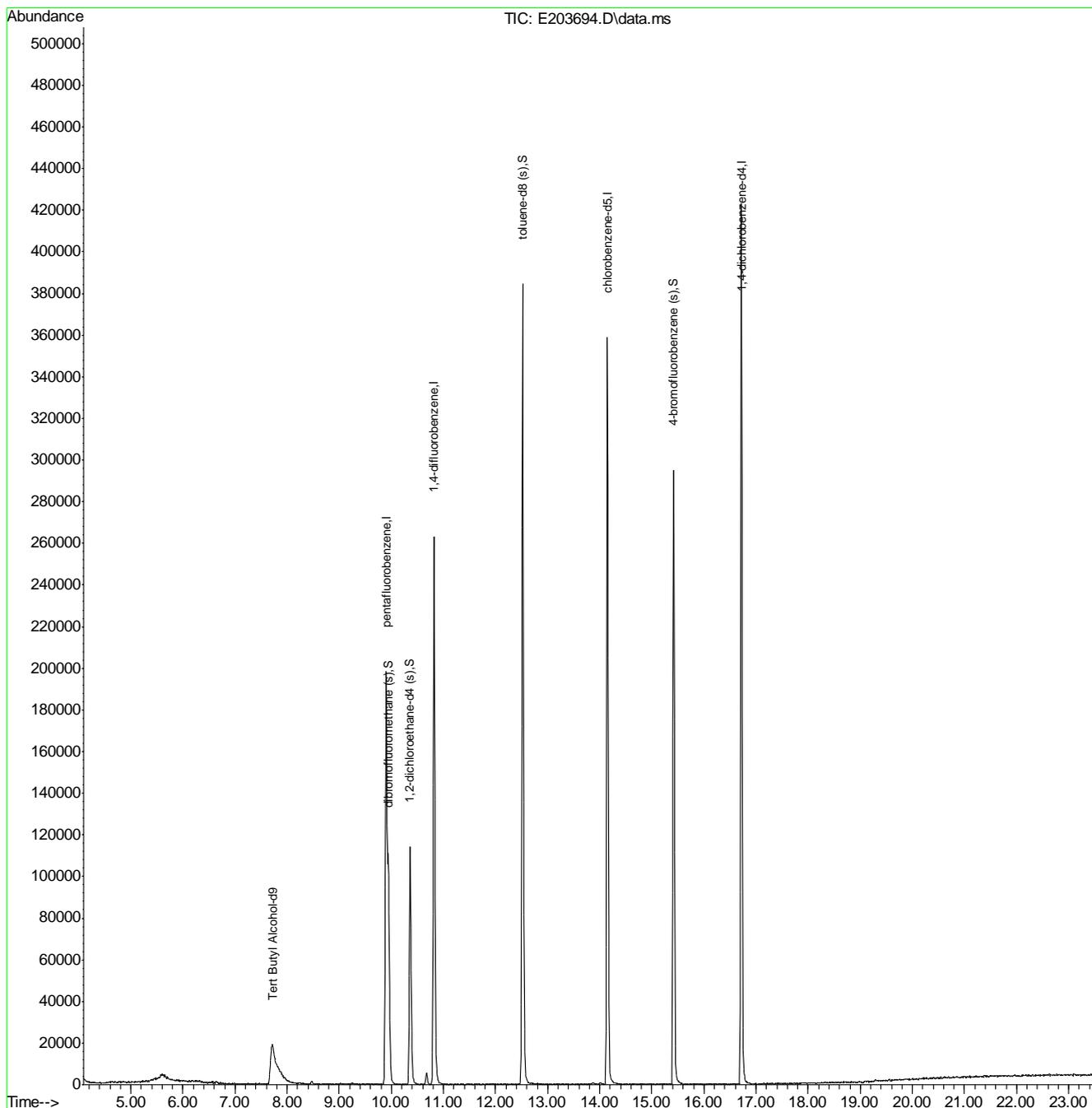
7.22

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
 Data File : E203694.D
 Acq On : 28 May 2013 11:26 pm
 Operator : Oksanat
 Sample : mb
 Misc : MS48600,VE8952,5,,100,5,1
 ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 29 15:38:35 2013
 Quant Method : C:\MSDCHEM\1\METHODS\ME8922.M
 Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
 QLast Update : Fri May 10 15:40:15 2013
 Response via : Initial Calibration



7.22
7

Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

2235 Route 130, Dayton, NJ 08810
 TEL: 732-329-0200 FAX: 732-329-3499/3480
 www.accutest.com

FED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # JB37539	
Requested Analysis (see TEST CODE sheet)			
Matrix Codes			
DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment CL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank			
LAB USE ONLY			

Client / Reporting Information		Project Information	
Company Name: Accutest Laboratories		Project Name: Marcus Hook Refinery	
Street Address: 2235 Route 130		Street: _____	
City: Dayton NJ 08810	State: NJ	City: _____	State: _____
Project Contact: Kristin Beebe		Billing Information (if different from Report to)	
Phone #: 732-355-4559	Fax #: _____	Company Name: _____	Street Address: _____
Sampler(s) Name(s): _____		Client Purchase Order #: _____	City: _____ State: _____ Zip: _____
Project Manager: _____		Attention: _____	

Accutest Sample #	Field ID / Point of Collection	MECH/IDI Vial #	Collection		Sampled by	Matrix	# of bottles	Number of preserved Bottles							%SOL	V8011EDB	B8270SL	PB	METDIG	LAB USE ONLY
			Date	Time				HCl	NaOH	NaOCl	NaOAc	NONE	DV Vial	MECH						
1			5/20/2013	12:45		Soil	2								X					
2			5/20/2013	14:00		Soil	2								X					
3			5/20/2013	08:15		Soil	2								X					
4			5/20/2013	08:30		Soil	2								X					
5			5/20/2013	13:20		Soil	2								X					
6			5/20/2013	13:40		Soil	2								X					

Turnaround Time (Business days)	Approved By (Accutest PH): / Date:	Data Deliverable Information	Comments / Special Instructions
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other	_____	<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input checked="" type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input type="checkbox"/> Other	Please send 300ml jar and 60ml jar to ALNE only. Methanol kits to remain here for analysis.

Sample Custody must be documented below each time samples change possession, including courier delivery.			
1	Relinquished by: <i>[Signature]</i>	Date Time: 5-21-13 1700	Received By: <i>[Signature]</i>
2	Relinquished by: <i>[Signature]</i>	Date Time: 9/15 5-22-13	Received By: <i>[Signature]</i>
3	Relinquished by: <i>[Signature]</i>	Date Time: _____	Received By: _____
4	Relinquished by: _____	Date Time: _____	Received By: _____
5	Relinquished by: _____	Date Time: _____	Received By: _____

Custody Seal # **683**

Intact Not-Intact

Preserved where applicable

On Ice Cooling Temp. **21°C**

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB37539 **Client:** ALNJ **Immediate Client Services Action Required:** No
Date / Time Received: 5/22/2013 **Delivery Method:** _____ **Client Service Action Required at Login:** No
Project: MARCUS **No. Coolers:** 1 **Airbill #'s:** _____

<u>Cooler Security</u>	<u>Y or N</u>	<u>Y or N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>	3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/> <input type="checkbox"/>	4. Smpl Dates/Time OK <input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Cooler temp verification:	Infrared gun
3. Cooler media:	Ice (bag)

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:			Intact

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2. Bottles received for unspecified tests:	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>

Comments

Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JB37539

AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA
Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB37539-1 Collected: 20-MAY-13 12:45 By: ZM Received: 20-MAY-13 By: BA AOI-5_MW_447_0-2'_52013						
JB37539-1	SW846 8011	24-MAY-13 21:22	AP	23-MAY-13 AF		V8011EDB
JB37539-1	SW846 6010C	29-MAY-13 21:13	EAL	29-MAY-13 EAL		PB
JB37539-1	SM21 2540 B MOD.	30-MAY-13	HS			%SOL
JB37539-1	SW846 8270C	04-JUN-13 02:44	KR	31-MAY-13 AJ		B8270SL
JB37539-2 Collected: 20-MAY-13 14:00 By: ZM Received: 20-MAY-13 By: BA AOI-5_MW_447_8-10'_52013						
JB37539-2	SW846 8011	24-MAY-13 21:46	AP	23-MAY-13 AF		V8011EDB
JB37539-2	SW846 6010C	29-MAY-13 21:18	EAL	29-MAY-13 EAL		PB
JB37539-2	SM21 2540 B MOD.	30-MAY-13	HS			%SOL
JB37539-2	SW846 8270C	04-JUN-13 03:08	KR	31-MAY-13 AJ		B8270SL
JB37539-3 Collected: 20-MAY-13 08:15 By: ZM Received: 20-MAY-13 By: BA AOI-5_MW_448_0-1_052013						
JB37539-3	SW846 8011	24-MAY-13 22:10	AP	23-MAY-13 AF		V8011EDB
JB37539-3	SW846 6010C	29-MAY-13 21:31	EAL	29-MAY-13 EAL		PB
JB37539-3	SM21 2540 B MOD.	30-MAY-13	HS			%SOL
JB37539-3	SW846 8270C	04-JUN-13 03:33	KR	31-MAY-13 AJ		B8270SL
JB37539-4 Collected: 20-MAY-13 08:30 By: ZM Received: 20-MAY-13 By: BA AOI-5_MW_448_3-4_052013						
JB37539-4	SW846 8011	24-MAY-13 22:34	AP	23-MAY-13 AF		V8011EDB
JB37539-4	SW846 6010C	29-MAY-13 21:35	EAL	29-MAY-13 EAL		PB
JB37539-4	SM21 2540 B MOD.	30-MAY-13	HS			%SOL
JB37539-4	SW846 8270C	04-JUN-13 03:57	KR	31-MAY-13 AJ		B8270SL
JB37539-5 Collected: 20-MAY-13 13:20 By: ZM Received: 20-MAY-13 By: BA AOI-5_MW_453_0-2_052013						
JB37539-5	SW846 8011	24-MAY-13 22:58	AP	23-MAY-13 AF		V8011EDB
JB37539-5	SW846 6010C	29-MAY-13 21:40	EAL	29-MAY-13 EAL		PB
JB37539-5	SM21 2540 B MOD.	30-MAY-13	HS			%SOL
JB37539-5	SW846 8270C	03-JUN-13 23:30	KR	31-MAY-13 AJ		B8270SL

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Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JB37539

AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
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JB37539-6 Collected: 20-MAY-13 13:40 By: ZM Received: 20-MAY-13 By: BA
AOI-5_MW_453_3-6_052013

JB37539-6	SW846 8011	24-MAY-13 23:23	AP	23-MAY-13 AF	V8011EDB
JB37539-6	SW846 6010C	29-MAY-13 21:44	EAL	29-MAY-13 EAL	PB
JB37539-6	SM21 2540 B MOD.	30-MAY-13	HS		%SOL
JB37539-6	SW846 8270C	03-JUN-13 23:54	KR	31-MAY-13 AJ	B8270SL



Accutest Internal Chain of Custody

Job Number: JB37539
 Account: ALNJ Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA
 Received: 05/20/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB37539-1.1	Walk In Ref #9	Amirhossein Farvardin	05/23/13 17:06	Retrieve from Storage
JB37539-1.1	Amirhossein Farvardin	Walk In Ref #9	05/23/13 22:29	Return to Storage
JB37539-1.1	Walk In Ref #9	Edouard Adrian Lee	05/29/13 13:01	Retrieve from Storage
JB37539-1.1	Edouard Adrian Lee	Walk In Ref #9	05/30/13 15:20	Return to Storage
JB37539-1.1	Walk In Ref #9	Mehdi Abdolrahim	05/30/13 15:20	Retrieve from Storage
JB37539-1.1	Mehdi Abdolrahim	Walk In Ref #9	05/30/13 16:23	Return to Storage
JB37539-1.2	Walk In Ref #9	Thomas Abruzzise	05/31/13 12:43	Retrieve from Storage
JB37539-1.2	Thomas Abruzzise	Walk In Ref #9	06/03/13 21:39	Return to Storage
JB37539-2.1	Walk In Ref #9	Amirhossein Farvardin	05/23/13 17:06	Retrieve from Storage
JB37539-2.1	Amirhossein Farvardin	Walk In Ref #9	05/23/13 22:29	Return to Storage
JB37539-2.1	Walk In Ref #9	Edouard Adrian Lee	05/29/13 13:01	Retrieve from Storage
JB37539-2.1	Edouard Adrian Lee	Walk In Ref #9	05/30/13 15:20	Return to Storage
JB37539-2.1	Walk In Ref #9	Mehdi Abdolrahim	05/30/13 15:20	Retrieve from Storage
JB37539-2.1	Mehdi Abdolrahim	Walk In Ref #9	05/30/13 16:23	Return to Storage
JB37539-2.2	Walk In Ref #9	Thomas Abruzzise	05/31/13 12:43	Retrieve from Storage
JB37539-2.2	Thomas Abruzzise	Walk In Ref #9	06/03/13 21:39	Return to Storage
JB37539-3.1	Walk In Ref #9	Amirhossein Farvardin	05/23/13 17:06	Retrieve from Storage
JB37539-3.1	Amirhossein Farvardin	Walk In Ref #9	05/23/13 22:29	Return to Storage
JB37539-3.1	Walk In Ref #9	Edouard Adrian Lee	05/29/13 13:01	Retrieve from Storage
JB37539-3.1	Edouard Adrian Lee	Walk In Ref #9	05/30/13 15:20	Return to Storage
JB37539-3.1	Walk In Ref #9	Mehdi Abdolrahim	05/30/13 15:20	Retrieve from Storage
JB37539-3.1	Mehdi Abdolrahim	Walk In Ref #9	05/30/13 16:23	Return to Storage
JB37539-3.2	Walk In Ref #9	Thomas Abruzzise	05/31/13 12:43	Retrieve from Storage
JB37539-3.2	Thomas Abruzzise	Walk In Ref #9	06/03/13 21:39	Return to Storage
JB37539-4.1	Walk In Ref #9	Amirhossein Farvardin	05/23/13 17:06	Retrieve from Storage
JB37539-4.1	Amirhossein Farvardin	Walk In Ref #9	05/23/13 22:29	Return to Storage
JB37539-4.1	Walk In Ref #9	Edouard Adrian Lee	05/29/13 13:01	Retrieve from Storage
JB37539-4.1	Edouard Adrian Lee	Walk In Ref #9	05/30/13 15:20	Return to Storage
JB37539-4.1	Walk In Ref #9	Mehdi Abdolrahim	05/30/13 15:20	Retrieve from Storage
JB37539-4.1	Mehdi Abdolrahim	Walk In Ref #9	05/30/13 16:23	Return to Storage
JB37539-4.2	Walk In Ref #9	Thomas Abruzzise	05/31/13 12:43	Retrieve from Storage
JB37539-4.2	Thomas Abruzzise	Walk In Ref #9	06/03/13 21:39	Return to Storage
JB37539-5.1	Walk In Ref #9	Amirhossein Farvardin	05/23/13 17:06	Retrieve from Storage
JB37539-5.1	Amirhossein Farvardin	Walk In Ref #9	05/23/13 22:29	Return to Storage
JB37539-5.1	Walk In Ref #9	Edouard Adrian Lee	05/29/13 13:01	Retrieve from Storage
JB37539-5.1	Edouard Adrian Lee	Walk In Ref #9	05/30/13 15:20	Return to Storage



Accutest Internal Chain of Custody

Job Number: JB37539
Account: ALNJ Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA
Received: 05/20/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB37539-5.1	Walk In Ref #9	Mehdi Abdolrahim	05/30/13 15:20	Retrieve from Storage
JB37539-5.1	Mehdi Abdolrahim	Walk In Ref #9	05/30/13 16:23	Return to Storage
JB37539-5.2	Walk In Ref #9	Thomas Abruzzise	05/31/13 12:43	Retrieve from Storage
JB37539-5.2	Thomas Abruzzise	Walk In Ref #9	06/03/13 21:39	Return to Storage
JB37539-6.1	Walk In Ref #9	Amirhossein Farvardin	05/23/13 17:06	Retrieve from Storage
JB37539-6.1	Amirhossein Farvardin	Walk In Ref #9	05/23/13 22:29	Return to Storage
JB37539-6.1	Walk In Ref #9	Edouard Adrian Lee	05/29/13 13:01	Retrieve from Storage
JB37539-6.1	Edouard Adrian Lee	Walk In Ref #9	05/30/13 15:20	Return to Storage
JB37539-6.1	Walk In Ref #9	Mehdi Abdolrahim	05/30/13 15:20	Retrieve from Storage
JB37539-6.1	Mehdi Abdolrahim	Walk In Ref #9	05/30/13 16:23	Return to Storage
JB37539-6.2	Walk In Ref #9	Thomas Abruzzise	05/31/13 12:43	Retrieve from Storage
JB37539-6.2	Thomas Abruzzise	Walk In Ref #9	06/03/13 21:39	Return to Storage



GC/MS Semi-volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB37539

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33426-MB	W12749.D	1	06/03/13	KR	05/31/13	OP33426	MSW587

The QC reported here applies to the following samples:

Method: SW846 8270C

JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	99	34	ug/kg	
56-55-3	Benzo(a)anthracene	ND	99	38	ug/kg	
50-32-8	Benzo(a)pyrene	ND	99	23	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	99	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	99	44	ug/kg	
218-01-9	Chrysene	ND	99	40	ug/kg	
86-73-7	Fluorene	ND	99	35	ug/kg	
91-20-3	Naphthalene	ND	99	38	ug/kg	
85-01-8	Phenanthrene	ND	99	30	ug/kg	
129-00-0	Pyrene	ND	99	30	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	69%	30-130%
4165-62-2	Phenol-d5	67%	30-130%
118-79-6	2,4,6-Tribromophenol	73%	30-130%
4165-60-0	Nitrobenzene-d5	68%	30-130%
321-60-8	2-Fluorobiphenyl	70%	30-130%
1718-51-0	Terphenyl-d14	76%	30-130%

Blank Spike Summary

Job Number: JB37539
 Account: ALNJ Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33426-BS	W12750.D	1	06/03/13	KR	05/31/13	OP33426	MSW587

The QC reported here applies to the following samples: Method: SW846 8270C

JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
120-12-7	Anthracene	2460	1580	64	40-140
56-55-3	Benzo(a)anthracene	2460	1770	72	40-140
50-32-8	Benzo(a)pyrene	2460	1550	63	40-140
205-99-2	Benzo(b)fluoranthene	2460	1800	73	40-140
191-24-2	Benzo(g,h,i)perylene	2460	1680	68	40-140
218-01-9	Chrysene	2460	1660	67	40-140
86-73-7	Fluorene	2460	1630	66	40-140
91-20-3	Naphthalene	2460	1530	62	40-140
85-01-8	Phenanthrene	2460	1640	67	40-140
129-00-0	Pyrene	2460	1680	68	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	59%	30-130%
4165-62-2	Phenol-d5	57%	30-130%
118-79-6	2,4,6-Tribromophenol	66%	30-130%
4165-60-0	Nitrobenzene-d5	58%	30-130%
321-60-8	2-Fluorobiphenyl	62%	30-130%
1718-51-0	Terphenyl-d14	67%	30-130%

* = Outside of Control Limits.

9.2.1
9

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB37539

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33426-MS	W12757.D	1	06/03/13	KR	05/31/13	OP33426	MSW587
OP33426-MSD	W12758.D	1	06/03/13	KR	05/31/13	OP33426	MSW587
MC21251-67	W12759.D	1	06/03/13	KR	05/31/13	OP33426	MSW587

The QC reported here applies to the following samples:

Method: SW846 8270C

JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

CAS No.	Compound	MC21251-67 Spike ug/kg	Q	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	58.3	2710	1850	66	1970	71	6	40-140/30
56-55-3	Benzo(a)anthracene	325	2710	2270	72	2540	82	11	40-140/30
50-32-8	Benzo(a)pyrene	362	2710	2080	63	2300	72	10	40-140/30
205-99-2	Benzo(b)fluoranthene	356	2710	2260	70	2410	76	6	40-140/30
191-24-2	Benzo(g,h,i)perylene	272	2710	2230	72	2370	78	6	40-140/30
218-01-9	Chrysene	370	2710	2240	69	2460	78	9	40-140/30
86-73-7	Fluorene	ND	2710	1900	70	1970	73	4	40-140/30
91-20-3	Naphthalene	ND	2710	1770	65	1810	67	2	40-140/30
85-01-8	Phenanthrene	274	2710	2150	69	2450	81	13	40-140/30
129-00-0	Pyrene	542	2710	2410	69	2760	83	14	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	MC21251-67 Limits
367-12-4	2-Fluorophenol	61%	62%	30-130%
4165-62-2	Phenol-d5	60%	60%	30-130%
118-79-6	2,4,6-Tribromophenol	69%	71%	30-130%
4165-60-0	Nitrobenzene-d5	60%	62%	51% 30-130%
321-60-8	2-Fluorobiphenyl	66%	68%	55% 30-130%
1718-51-0	Terphenyl-d14	68%	71%	57% 30-130%

* = Outside of Control Limits.

9.3.1
9

Instrument Performance Check (DFTPP)

Job Number: JB37539
 Account: ALNJ Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW580-DFTPP	Injection Date:	05/30/13
Lab File ID:	W12578.D	Injection Time:	07:20
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	17592	44.7	Pass
68	Less than 2.0% of mass 69	327	0.83 (1.75) ^a	Pass
69	Mass 69 relative abundance	18712	47.6	Pass
70	Less than 2.0% of mass 69	0	0.00 (0.00) ^a	Pass
127	40.0 - 60.0% of mass 198	21376	54.4	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	39328	100.0	Pass
199	5.0 - 9.0% of mass 198	2823	7.18	Pass
275	10.0 - 30.0% of mass 198	10085	25.6	Pass
365	1.0 - 100.0% of mass 198	1062	2.70	Pass
441	Present, but less than mass 443	2939	7.47 (71.7) ^b	Pass
442	40.0 - 100.0% of mass 198	19792	50.3	Pass
443	17.0 - 23.0% of mass 442	4099	10.4 (20.7) ^c	Pass

- (a) Value is % of mass 69
- (b) Value is % of mass 443
- (c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW579-IC579	W12580.D	05/30/13	09:02	01:42	Initial cal 2
MSW579-IC579	W12581.D	05/30/13	09:25	02:05	Initial cal 5
MSW579-IC579	W12582.D	05/30/13	10:16	02:56	Initial cal 10
MSW579-IC579	W12583.D	05/30/13	10:40	03:20	Initial cal 20
MSW579-ICC579	W12584.D	05/30/13	11:03	03:43	Initial cal 50
MSW579-IC579	W12585.D	05/30/13	11:26	04:06	Initial cal 80
MSW579-IC579	W12586.D	05/30/13	11:49	04:29	Initial cal 120
MSW579-IC579	W12587.D	05/30/13	12:12	04:52	Initial cal 160
MSW579-ICV579	W12588.D	05/30/13	12:36	05:16	Initial cal verification 50
MSW579-ICV579	W12589.D	05/30/13	12:59	05:39	Initial cal verification 20
MSW579-ICV579	W12590.D	05/30/13	13:22	06:02	Initial cal verification 20
MSW580-ICC580	W12593.D	05/30/13	15:22	08:02	Initial cal 50
MSW580-IC580	W12594.D	05/30/13	15:45	08:25	Initial cal 5
MSW580-IC580	W12595.D	05/30/13	16:08	08:48	Initial cal 10
MSW580-IC580	W12596.D	05/30/13	16:31	09:11	Initial cal 20
MSW580-IC580	W12597.D	05/30/13	16:54	09:34	Initial cal 40
MSW580-IC580	W12598.D	05/30/13	17:18	09:58	Initial cal 80
MSW580-IC580	W12599.D	05/30/13	17:41	10:21	Initial cal 100

9.4.1
9

Instrument Performance Check (DFTPP)

Job Number: JB37539
 Account: ALNJ Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW587-DFTPP	Injection Date:	06/03/13
Lab File ID:	W12744.D	Injection Time:	16:53
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	5927	33.9	Pass
68	Less than 2.0% of mass 69	0	0.00 (0.00) ^a	Pass
69	Mass 69 relative abundance	6445	36.8	Pass
70	Less than 2.0% of mass 69	0	0.00 (0.00) ^a	Pass
127	40.0 - 60.0% of mass 198	8423	48.1	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	17504	100.0	Pass
199	5.0 - 9.0% of mass 198	1226	7.00	Pass
275	10.0 - 30.0% of mass 198	4639	26.5	Pass
365	1.0 - 100.0% of mass 198	399	2.28	Pass
441	Present, but less than mass 443	1675	9.57 (74.3) ^b	Pass
442	40.0 - 100.0% of mass 198	10614	60.6	Pass
443	17.0 - 23.0% of mass 442	2255	12.9 (21.2) ^c	Pass

- (a) Value is % of mass 69
- (b) Value is % of mass 443
- (c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW587-CC579	W12747.D	06/03/13	18:24	01:31	Continuing cal 80
ZZZZZZ	W12748.D	06/03/13	18:47	01:54	(unrelated sample)
OP33426-MB	W12749.D	06/03/13	19:10	02:17	Method Blank
OP33426-BS	W12750.D	06/03/13	19:33	02:40	Blank Spike
ZZZZZZ	W12751.D	06/03/13	19:57	03:04	(unrelated sample)
ZZZZZZ	W12752.D	06/03/13	20:20	03:27	(unrelated sample)
ZZZZZZ	W12753.D	06/03/13	20:44	03:51	(unrelated sample)
ZZZZZZ	W12754.D	06/03/13	21:07	04:14	(unrelated sample)
ZZZZZZ	W12755.D	06/03/13	21:31	04:38	(unrelated sample)
ZZZZZZ	W12756.D	06/03/13	21:55	05:02	(unrelated sample)
OP33426-MS	W12757.D	06/03/13	22:18	05:25	Matrix Spike
OP33426-MSD	W12758.D	06/03/13	22:42	05:49	Matrix Spike Duplicate
MC21251-67	W12759.D	06/03/13	23:06	06:13	(used for QC only; not part of job JB37539)
JB37539-5	W12760.D	06/03/13	23:30	06:37	AOI-5_MW_453_0-2_052013
JB37539-6	W12761.D	06/03/13	23:54	07:01	AOI-5_MW_453_3-6_052013
ZZZZZZ	W12762.D	06/04/13	00:18	07:25	(unrelated sample)
ZZZZZZ	W12763.D	06/04/13	00:42	07:49	(unrelated sample)
ZZZZZZ	W12764.D	06/04/13	01:07	08:14	(unrelated sample)
ZZZZZZ	W12765.D	06/04/13	01:31	08:38	(unrelated sample)

9.4.2
9

Instrument Performance Check (DFTPP)

Job Number: JB37539
Account: ALNJ Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW587-DFTPP	Injection Date:	06/03/13
Lab File ID:	W12744.D	Injection Time:	16:53
Instrument ID:	GCMSW		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
<u>ZZZZZZ</u>	W12766.D	06/04/13	01:55	09:02	(unrelated sample)
<u>ZZZZZZ</u>	W12767.D	06/04/13	02:20	09:27	(unrelated sample)
JB37539-1	W12768.D	06/04/13	02:44	09:51	AOI-5_MW_447_0-2'_52013
JB37539-2	W12769.D	06/04/13	03:08	10:15	AOI-5_MW_447_8-10'_52013
JB37539-3	W12770.D	06/04/13	03:33	10:40	AOI-5_MW_448_0-1_052013
JB37539-4	W12771.D	06/04/13	03:57	11:04	AOI-5_MW_448_3-4_052013

Semivolatiles Internal Standard Area Summary

Job Number: JB37539
 Account: ALNJ Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSW587-CC579	Injection Date:	06/03/13
Lab File ID:	W12747.D	Injection Time:	18:24
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	49710	4.26	183579	5.33	125141	6.86	243713	8.28	315317	11.27	315862	12.86
Upper Limit ^a	99420	4.76	367158	5.83	250282	7.36	487426	8.78	630634	11.77	631724	13.36
Lower Limit ^b	24855	3.76	91790	4.83	62571	6.36	121857	7.78	157659	10.77	157931	12.36

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	51129	4.26	184839	5.32	126582	6.86	239402	8.28	308361	11.26	304175	12.86
OP33426-MB	56228	4.26	203451	5.32	138010	6.86	259457	8.28	323505	11.26	320152	12.86
OP33426-BS	59288	4.26	213250	5.32	144765	6.86	271695	8.28	329783	11.27	313917	12.86
ZZZZZZ	56493	4.26	202721	5.32	134688	6.86	251660	8.28	307247	11.26	306066	12.86
ZZZZZZ	50726	4.26	184437	5.32	123157	6.86	231820	8.28	294507	11.26	291350	12.86
ZZZZZZ	48983	4.26	172893	5.32	116755	6.86	218829	8.28	266518	11.26	267056	12.86
ZZZZZZ	56742	4.26	201997	5.32	133480	6.86	251553	8.28	311033	11.26	307002	12.86
ZZZZZZ	51868	4.26	185921	5.32	125180	6.86	234587	8.28	299118	11.26	300350	12.86
ZZZZZZ	49877	4.26	182161	5.32	121887	6.86	234247	8.28	301321	11.26	292280	12.86
OP33426-MS	53568	4.26	193200	5.32	130618	6.86	245122	8.28	299931	11.27	301802	12.86
OP33426-MSD	54350	4.26	193063	5.32	129894	6.86	240604	8.28	292571	11.27	300314	12.86
MC21251-67	57818	4.26	208961	5.32	140759	6.86	261677	8.28	319675	11.27	326202	12.86
JB37539-5	53870	4.26	195727	5.32	130203	6.86	238728	8.28	294285	11.27	297317	12.86
JB37539-6	55211	4.26	194828	5.32	131700	6.86	231995	8.29	289199	11.27	298118	12.86
ZZZZZZ	60035	4.26	215403	5.32	146551	6.86	267876	8.28	325026	11.26	316098	12.86
ZZZZZZ	54899	4.26	197652	5.32	132306	6.86	246389	8.28	305765	11.26	306890	12.86
ZZZZZZ	51731	4.26	185780	5.32	127459	6.86	242310	8.28	304880	11.26	303678	12.86
ZZZZZZ	50534	4.26	180964	5.32	124325	6.86	234612	8.28	298538	11.27	300372	12.86
ZZZZZZ	49840	4.26	180741	5.32	122225	6.86	231082	8.28	292682	11.27	290783	12.86
ZZZZZZ	56974	4.26	204164	5.32	136795	6.86	257959	8.28	305632	11.27	307690	12.86
JB37539-1	49924	4.26	182884	5.32	124089	6.86	232751	8.28	296013	11.27	296071	12.87
JB37539-2	54459	4.26	190591	5.32	127217	6.86	228639	8.29	290605	11.27	298926	12.87
JB37539-3	49875	4.26	179922	5.32	123819	6.86	228090	8.28	286490	11.27	281743	12.88
JB37539-4	55648	4.26	197953	5.32	132925	6.86	243792	8.28	297791	11.27	297425	12.86

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

9.5.1
9

Semivolatiles Surrogate Recovery Summary

Job Number: JB37539

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8270C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JB37539-1	W12768.D	56.0	62.0	65.0
JB37539-2	W12769.D	52.0	55.0	58.0
JB37539-3	W12770.D	48.0	54.0	58.0
JB37539-4	W12771.D	60.0	64.0	69.0
JB37539-5	W12760.D	56.0	65.0	70.0
JB37539-6	W12761.D	65.0	72.0	77.0
OP33426-BS	W12750.D	58.0	62.0	67.0
OP33426-MB	W12749.D	68.0	70.0	76.0
OP33426-MS	W12757.D	60.0	66.0	68.0
OP33426-MSD	W12758.D	62.0	68.0	71.0

Surrogate Compounds

Recovery Limits

S1 = Nitrobenzene-d5

30-130%

S2 = 2-Fluorobiphenyl

30-130%

S3 = Terphenyl-d14

30-130%

Initial Calibration Summary

Job Number: JB37539

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Response Factor Report MSW

Method : C:\msdchem\1\met...\W130530_8270+.m (RTE Integrator)
Title : SW-864 Method 8270
Last Update : Thu May 30 18:03:11 2013
Response via : Initial Calibration

Calibration Files

160 =w12587.D 120 =w12586.D 80 =w12585.D 20 =w12583.D
5 =w12581.D 2 =w12580.D 10 =w12582.D 50 =w12584.D

Compound	160	120	80	20	5	2	10	50	Avg	%RSD
1) I 1,4-Dichlorobenzene-d	-----ISTD-----									
2) N-nitrosodim	0.622	0.609	0.636	0.633	0.609		0.653	0.637	0.628	2.59
3) Pyridine	1.104	1.099	1.162	1.188	1.297		1.209	1.191	1.179	5.74
4) Aniline		0.504	0.541	0.589	0.572	0.544	0.588	0.574	0.559	5.52
5) 2-Fluorophen	1.096	1.081	1.070	1.092	1.036	1.084	1.121	1.086	1.083	2.23
6) bis(2-Chloro	0.652	0.651	0.671	0.682	0.686	0.660	0.714	0.684	0.675	3.12
7) Phenol-d5	1.355	1.336	1.312	1.354	1.233	1.250	1.371	1.349	1.320	3.90
8) Phenol	1.516	1.391	1.437	1.423	1.334	1.302	1.421	1.440	1.408	4.71
9) 2-Chlorophen	1.292	1.264	1.297	1.297	1.249	1.295	1.313	1.304	1.289	1.67
10) 1,3-Dichloro	1.452	1.434	1.467	1.488	1.495	1.488	1.547	1.501	1.484	2.31
11) 1,4-Dichloro	1.527	1.517	1.561	1.564	1.573	1.587	1.659	1.559	1.568	2.77
12) 1,2-Dichloro	1.404	1.393	1.438	1.451	1.434	1.407	1.488	1.437	1.431	2.13
13) Benzyl alcoh	0.814	0.801	0.813	0.788	0.739		0.803	0.824	0.798	3.51
14) bis(2-chloro	0.857	0.850	0.878	0.908	0.902	0.845	0.959	0.899	0.887	4.28
15) o-cresol	1.086	1.062	1.106	1.118	1.059	1.041	1.133	1.125	1.091	3.14
16) Acetophenone	1.670	1.679	1.665	1.765	1.688	1.694	1.824	1.759	1.718	3.35
17) Hexachloroet	0.486	0.476	0.493	0.494	0.493	0.478	0.516	0.504	0.493	2.62
18) N-Nitroso-di	0.735	0.719	0.743	0.723	0.621		0.751	0.757	0.721	6.43
19) m+p-cresols	1.191	1.172	1.178	1.211	1.132	1.107	1.225	1.214	1.179	3.50
20) 4-methylphen	1.191	1.172	1.178	1.211	1.132	1.107	1.225	1.214	1.179	3.50
21) I 1,4-Dichlorobenzene-d	-----ISTD-----									
22) Benzaldehyde								0.000#		-1.00
23) I Naphthalene-d8	-----ISTD-----									
24) Nitrobenzene	0.309	0.301	0.298	0.307	0.269	0.256	0.315	0.309	0.295	7.23
25) Nitrobenzene	0.304	0.298	0.309	0.316	0.292	0.271	0.326	0.319	0.304	5.68
26) Isophorone	0.550	0.538	0.559	0.575	0.565	0.562	0.591	0.580	0.565	3.02
27) 2-Nitropheno	0.205	0.198	0.204	0.198	0.170		0.197	0.204	0.196	6.26
28) 2,4-Dimethyl	0.329	0.317	0.330	0.341	0.330		0.339	0.341	0.332	2.62
29) bis(2-Chloro	0.348	0.342	0.350	0.358	0.364		0.373	0.359	0.356	2.93
30) Benzoic acid	0.276	0.259	0.266	0.213			0.174	0.259	0.241	16.39
---- Linear regression ---- Coefficient = 0.9990										
Response Ratio = -0.02657 + 0.27590 *A										
31) 2,4-Dichloro	0.346	0.340	0.347	0.348	0.338		0.344	0.356	0.345	1.77
32) 1,2,4-Trichl	0.373	0.365	0.379	0.383	0.388	0.391	0.399	0.388	0.383	2.75
33) Naphthalene	0.983	0.981	1.015	1.042	1.049	1.059	1.093	1.041	1.033	3.69
34) 2,6-Dichloro	0.336	0.330	0.342	0.348	0.336		0.353	0.352	0.342	2.62
35) 4-Chloroanil	0.434	0.426	0.441	0.448	0.422		0.446	0.457	0.439	2.84
36) Hexachlorobu	0.238	0.235	0.246	0.251	0.257	0.256	0.260	0.253	0.249	3.62
37) 4-Chloro-3-m	0.298	0.288	0.296	0.300	0.279		0.302	0.306	0.295	3.13
38) 2-Methylnaph	0.746	0.727	0.758	0.787	0.768	0.761	0.814	0.785	0.768	3.51
39) 1-Methylnaph	0.703	0.704	0.715	0.755	0.740	0.747	0.779	0.751	0.737	3.69
40) 1,2,4,5-Tetr	0.454	0.453	0.459	0.489	0.472	0.492	0.502	0.483	0.475	3.99

9.7.1
9

Initial Calibration Summary

Job Number: JB37539

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

41) I	Naphthalene-d8a	-----ISTD-----									
42)	Caprolactam								0.000# -1.00		
43) I	Acenaphthene-d10	-----ISTD-----									
44)	Pentachloron	0.186	0.182	0.183	0.183		0.180	0.196	0.185	3.10	
45)	Hexachlorocy	0.420	0.409	0.447	0.398	0.361		0.406	0.438	0.411	6.92
46)	2,4,6-Trichl	0.435	0.426	0.437	0.434	0.430		0.441	0.452	0.436	1.91
47)	2,4,5-Trichl	0.464	0.446	0.470	0.463	0.447		0.473	0.485	0.464	3.04
48)	2-Fluorobiph	1.311	1.307	1.330	1.386	1.373	1.407	1.471	1.400	1.373	4.05
49)	2-Chloronaph	1.059	1.047	1.088	1.097	1.121	1.100	1.140	1.122	1.097	2.89
50)	Acenaphthyle	1.699	1.679	1.790	1.821	1.828	1.784	1.879	1.868	1.794	4.05
51)	Dimethylphth	1.304	1.277	1.339	1.362	1.360	1.335	1.411	1.396	1.348	3.30
52)	2,4-Dinitrot	0.403	0.390	0.403	0.380			0.376	0.415	0.394	3.83
53)	Acenaphthene	1.061	1.051	1.097	1.121	1.146	1.116	1.164	1.146	1.113	3.67
54)	2,4-Dinitrop	0.247	0.234	0.240	0.195				0.233	0.230	8.81
55)	Dibenzofuran	1.636	1.613	1.696	1.744	1.756	1.745	1.788	1.778	1.720	3.79
56)	2,6-Dinitrot	0.305	0.300	0.312	0.286			0.277	0.317	0.299	5.11
57)	4-Nitropheno	0.183	0.180	0.184	0.183			0.173	0.194	0.183	3.61
58)	2,3,4,6-Tetr	0.457	0.444	0.463	0.461	0.452		0.476	0.486	0.463	3.07
59)	Fluorene	1.274	1.261	1.334	1.374	1.401	1.379	1.429	1.405	1.357	4.57
60)	4-Chlorophen	0.711	0.708	0.763	0.783	0.792	0.764	0.802	0.803	0.766	4.96
61)	Diethylphtha	1.177	1.155	1.212	1.226	1.248	1.209	1.272	1.265	1.221	3.36
62)	2-nitroanili	0.353	0.339	0.346	0.307			0.295	0.347	0.331	7.26
63)	3-nitroanili	0.302	0.292	0.298	0.287			0.278	0.309	0.294	3.77
64)	4-nitroanili	0.305	0.294	0.299	0.286			0.271	0.313	0.295	5.01
65)	Acenaphthene-d10a	-----ISTD-----									
66)	1,1'-Bipheny								0.000# -1.00		
67) I	Phenanthrene-d10	-----ISTD-----									
68)	4,6-Dinitro-	0.169	0.162	0.167	0.147			0.144	0.164	0.159	6.70
69)	n-Nitrosodip	0.497	0.491	0.519	0.525	0.520	0.566	0.546	0.532	0.524	4.67
70)	1,2-Diphenyl	0.521	0.442	0.467	0.474	0.488	0.483	0.496	0.480	0.481	4.70
71)	2,4,6-Tribro	0.166	0.165	0.163	0.159	0.146		0.166	0.164	0.161	4.34
72)	4-Bromopheny	0.270	0.265	0.278	0.273	0.278	0.260	0.292	0.284	0.275	3.71
73)	Hexachlorobe	0.291	0.288	0.305	0.302	0.302	0.300	0.317	0.306	0.301	3.00
74)	Pentachlorop	0.225	0.218	0.222	0.208			0.211	0.224	0.218	3.21
75)	Phenanthrene	1.017	1.009	1.061	1.094	1.107	1.124	1.153	1.097	1.083	4.65
76)	Anthracene	1.046	1.057	1.105	1.159	1.162	1.136	1.209	1.175	1.131	5.08
77)	Carbazole	0.928	0.922	0.948	0.989	0.989	0.947	1.024	1.009	0.969	3.96
78)	Di-n-butylph	1.062	1.056	1.107	1.086	1.074		1.147	1.135	1.095	3.24
79)	Fluoranthene	1.184	1.192	1.243	1.296	1.292	1.262	1.362	1.308	1.267	4.75
80) I	Phenanthrene-d10a	-----ISTD-----									
81)	Atrazine								0.000# -1.00		
82) I	Chrysene-d12	-----ISTD-----									
83)	Benzidine	0.259	0.250	0.285	0.268			0.241	0.284	0.264	6.83
84)	Pyrene	1.027	1.004	1.068	1.087	1.068	1.007	1.125	1.102	1.061	4.19
85)	Terphenyl-d1	0.895	0.874	0.909	0.953	0.917	0.876	0.994	0.956	0.922	4.60
86)	3,3-Dimethyl	0.402	0.386	0.438	0.414	0.270		0.404	0.444	0.394	14.79
87)	Butylbenzylp	0.352	0.333	0.348	0.302	0.262		0.300	0.338	0.319	10.18
88)	3,3'-Dichlor	0.429	0.422	0.441	0.399	0.317		0.391	0.446	0.406	10.89
89)	Benzo[a]anth	0.996	0.992	1.044	1.081	1.084	1.047	1.119	1.094	1.057	4.34
90)	Chrysene	0.985	0.960	1.016	1.050	1.066	1.045	1.082	1.057	1.033	4.07
91)	bis(2-Ethylh	0.537	0.516	0.540	0.460	0.385		0.459	0.522	0.489	11.62
92) I	Perylene-d12	-----ISTD-----									
93)	Di-n-octylph	0.810	0.837	0.840	0.738	0.546		0.682	0.815	0.753	14.37
94)	Benzo[b]fluo	1.343	1.313	1.306	1.177	1.064	0.992	1.211	1.189	1.199	10.30

Initial Calibration Summary

Job Number: JB37539

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

95) Benzo[k]fluo	1.079	1.092	1.061	1.239	1.264	1.220	1.260	1.252	1.183	7.55
96) Benzo[a]pyre	1.052	1.038	1.103	1.135	1.005	0.925	1.086	1.128	1.059	6.62
97) Indeno[1,2,3	1.434	1.405	1.437	1.392	1.278	1.141	1.387	1.438	1.364	7.64
98) Dibenz[a,h]a	1.166	1.148	1.178	1.156	1.061	0.945	1.156	1.199	1.126	7.43
99) Benzo[g,h,i]	1.183	1.161	1.183	1.138	1.096	1.011	1.161	1.175	1.139	5.19

(#) = Out of Range ### Number of calibration levels exceeded format ###

W130530_8270+.m

Fri May 31 15:37:31 2013

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12588.D Vial: 9
 Acq On : 30 May 2013 12:36 pm Operator: kristinr
 Sample : ICV579-50 Inst : MSW
 Misc : op33225,msw579,,,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\W130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 18:03:11 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	89	0.00	4.21
2	N-nitrosodimethylamine			-----NA-----			
3 T	Pyridine			-----NA-----			
4 T	Aniline			-----NA-----			
5 S	2-Fluorophenol	1.083	1.078	0.5	89	0.00	3.26
6 T	bis(2-Chloroethyl)ether			-----NA-----			
7 S	Phenol-d5	1.320	1.259	4.6	83	0.00	3.94
8 C	Phenol	1.408	1.400	0.6	87	0.00	3.95
9 M	2-Chlorophenol	1.289	1.280	0.7	88	0.00	4.07
10 T	1,3-Dichlorobenzene			-----NA-----			
11 C	1,4-Dichlorobenzene			-----NA-----			
12 T	1,2-Dichlorobenzene			-----NA-----			
13 T	Benzyl alcohol			-----NA-----			
14 T	bis(2-chloroisopropyl)eth			-----NA-----			
15 T	o-cresol	1.091	1.090	0.1	86	0.00	4.43
16 T	Acetophenone			-----NA-----			
17 T	Hexachloroethane			-----NA-----			
18 P	N-Nitroso-di-n-propylamin			-----NA-----			
19 T	m+p-cresols	1.179	1.189	-0.8	87	0.00	4.55
20	4-methylphenol	1.179	1.189	-0.8	87	0.00	4.55
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0#	-0.06	4.21
22	Benzaldehyde			-----NA-----			
23 I	Naphthalene-d8	1.000	1.000	0.0	88	0.00	5.27
24 S	Nitrobenzene-d5			-----NA-----			
25 T	Nitrobenzene			-----NA-----			
26 T	Isophorone			-----NA-----			
27 C	2-Nitrophenol	0.196	0.198	-1.0	85	0.00	4.97
28 T	2,4-Dimethylphenol	0.332	0.337	-1.5	87	0.00	4.99
29 T	bis(2-Chloroethoxy)methan			-----NA-----			
30 T	Benzoic acid	50.000	56.295	-12.6	98	-0.01	5.08
31 C	2,4-Dichlorophenol	0.345	0.349	-1.2	86	0.00	5.16
32 M	1,2,4-Trichlorobenzene			-----NA-----			
33 T	Naphthalene			-----NA-----			
34 T	2,6-Dichlorophenol	0.342	0.345	-0.9	86	0.00	5.36
35 T	4-Chloroaniline			-----NA-----			
36 C	Hexachlorobutadiene			-----NA-----			

9.7.2
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Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37	C	4-Chloro-3-methylphenol	0.295	0.298	-1.0	86	0.00	5.76
38	T	2-Methyl-naphthalene			-----NA-----			
39	T	1-Methyl-naphthalene			-----NA-----			
40	T	1,2,4,5-Tetrachlorobenzene			-----NA-----			
41	I	Naphthalene-d8a	1.000	1.000	0.0	0#	-0.06	5.27
42		Caprolactam			-----NA-----			
43	I	Acenaphthene-d10	1.000	1.000	0.0	88	0.00	6.81
44	T	Pentachloronitrobenzene			-----NA-----			
45	P	Hexachlorocyclopentadiene			-----NA-----			
46	C	2,4,6-Trichlorophenol	0.436	0.434	0.5	85	0.00	6.15
47	T	2,4,5-Trichlorophenol	0.464	0.482	-3.9	88	0.00	6.18
48	S	2-Fluorobiphenyl			-----NA-----			
49	T	2-Chloronaphthalene			-----NA-----			
50	M	Acenaphthylene			-----NA-----			
51	T	Dimethylphthalate			-----NA-----			
52	T	2,4-Dinitrotoluene			-----NA-----			
53	C	Acenaphthene			-----NA-----			
54	P	2,4-Dinitrophenol	0.230	0.208	9.6	79	0.00	6.87
55	T	Dibenzofuran			-----NA-----			
56	M	2,6-Dinitrotoluene			-----NA-----			
57	P	4-Nitrophenol	0.183	0.197	-7.7	90	0.00	6.93
58	T	2,3,4,6-Tetrachlorophenol	0.463	0.474	-2.4	86	0.00	7.14
59	T	Fluorene			-----NA-----			
60	T	4-Chlorophenyl-phenylether			-----NA-----			
61	T	Diethylphthalate			-----NA-----			
62	T	2-nitroaniline			-----NA-----			
63	T	3-nitroaniline			-----NA-----			
64	T	4-nitroaniline			-----NA-----			
65		Acenaphthene-d10a	1.000	1.000	0.0	0#	-0.05	6.81
66		1,1'-Biphenyl			-----NA-----			
67	I	Phenanthrene-d10	1.000	1.000	0.0	90	0.00	8.22
68	T	4,6-Dinitro-2-methylpheno	0.159	0.162	-1.9	89	-0.01	7.39
69	C	n-Nitrosodiphenylamine			-----NA-----			
70	T	1,2-Diphenylhydrazine			-----NA-----			
71	S	2,4,6-Tribromophenol	0.161	0.152	5.6	83	0.00	7.55
72	T	4-Bromophenyl-phenylether			-----NA-----			
73	T	Hexachlorobenzene			-----NA-----			
74	C	Pentachlorophenol	0.218	0.234	-7.3	94	0.00	8.09
75	T	Phenanthrene			-----NA-----			
76	T	Anthracene			-----NA-----			
77	T	Carbazole			-----NA-----			
78	T	Di-n-butylphthalate			-----NA-----			
79	C	Fluoranthene			-----NA-----			
80	I	Phenanthrene-d10a	1.000	1.000	0.0	0#	0.00	8.27
81		Atrazine			-----NA-----			
82	I	Chrysene-d12	1.000	1.000	0.0	98	-0.01	11.20
83	T	Benzidine			-----NA-----			
84	M	Pyrene			-----NA-----			
85	S	Terphenyl-d14			-----NA-----			
86		3,3-Dimethylbenzidine			-----NA-----			
87	T	Butylbenzylphthalate			-----NA-----			
88	T	3,3'-Dichlorobenzidine			-----NA-----			
89	T	Benzo[a]anthracene			-----NA-----			
90	T	Chrysene			-----NA-----			

9.7.2
9

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91	T	bis(2-Ethylhexyl)phthalat				-----NA-----		
92	I	Perylene-d12	1.000	1.000	0.0	100	0.00	12.79
93	C	Di-n-octylphthalate				-----NA-----		
94	T	Benzo[b]fluoranthene				-----NA-----		
95	T	Benzo[k]fluoranthene				-----NA-----		
96	C	Benzo[a]pyrene				-----NA-----		
97	T	Indeno[1,2,3-cd]pyrene				-----NA-----		
98	T	Dibenz[a,h]anthracene				-----NA-----		
99	T	Benzo[g,h,i]perylene				-----NA-----		

(#) = Out of Range

w12584.D W130530_8270+.m

SPCC's out = 2 CCC's out = 7

Fri May 31 15:20:54 2013

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12589.D Vial: 10
 Acq On : 30 May 2013 12:59 pm Operator: kristinr
 Sample : ICV579-20 Inst : MSW
 Misc : op33225,msw579,,,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\W130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 18:03:11 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	86	0.00	4.21
2	N-nitrosodimethylamine	0.628	0.652	-3.8	88	0.00	2.35
3 T	Pyridine	1.179	1.137	3.6	82	0.02	2.37
4 T	Aniline			-----NA-----			
5 S	2-Fluorophenol			-----NA-----			
6 T	bis(2-Chloroethyl)ether	0.675	0.679	-0.6	85	0.00	4.02
7 S	Phenol-d5			-----NA-----			
8 C	Phenol			-----NA-----			
9 M	2-Chlorophenol			-----NA-----			
10 T	1,3-Dichlorobenzene	1.484	1.533	-3.3	88	0.00	4.19
11 C	1,4-Dichlorobenzene	1.568	1.591	-1.5	87	0.00	4.22
12 T	1,2-Dichlorobenzene	1.431	1.491	-4.2	88	0.00	4.38
13 T	Benzyl alcohol	0.798	0.799	-0.1	87	0.00	4.33
14 T	bis(2-chloroisopropyl)eth	0.887	1.057	-19.2	100	0.00	4.45
15 T	o-cresol			-----NA-----			
16 T	Acetophenone	1.718	1.695	1.3	82	0.00	4.55
17 T	Hexachloroethane	0.493	0.510	-3.4	88	0.00	4.63
18 P	N-Nitroso-di-n-propylamin	0.721	0.744	-3.2	88	-0.01	4.57
19 T	m+p-cresols			-----NA-----			
20	4-methylphenol			-----NA-----			
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0#	-0.06	4.21
22	Benzaldehyde			-----NA-----			
23 I	Naphthalene-d8	1.000	1.000	0.0	86	0.00	5.27
24 S	Nitrobenzene-d5	0.295	0.296	-0.3	83	0.00	4.68
25 T	Nitrobenzene	0.304	0.308	-1.3	84	0.00	4.69
26 T	Isophorone	0.565	0.550	2.7	82	-0.01	4.88
27 C	2-Nitrophenol			-----NA-----			
28 T	2,4-Dimethylphenol			-----NA-----			
29 T	bis(2-Chloroethoxy)methan	0.356	0.363	-2.0	87	0.00	5.07
	----- Amount		Calc.	%Drift			
30 T	Benzoic acid			-----NA-----			
	----- AvgRF		CCRF	%Dev			
31 C	2,4-Dichlorophenol			-----NA-----			
32 M	1,2,4-Trichlorobenzene	0.383	0.404	-5.5	91	0.00	5.23
33 T	Naphthalene	1.033	1.076	-4.2	89	0.00	5.29
34 T	2,6-Dichlorophenol			-----NA-----			
35 T	4-Chloroaniline			-----NA-----			
36 C	Hexachlorobutadiene	0.249	0.259	-4.0	89	0.00	5.44

9.7.3
9

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37	C	4-Chloro-3-methylphenol			-----NA-----			
38	T	2-Methylnaphthalene	0.768	0.785	-2.2	86	0.00	5.88
39	T	1-Methylnaphthalene	0.737	0.748	-1.5	85	0.00	5.98
40	T	1,2,4,5-Tetrachlorobenzen	0.475	0.483	-1.7	85	0.00	6.06
41	I	Naphthalene-d8a	1.000	1.000	0.0	0#	-0.06	5.27
42		Caprolactam			-----NA-----			
43	I	Acenaphthene-d10	1.000	1.000	0.0	84	0.00	6.81
44	T	Pentachloronitrobenzene	0.185	0.183	1.1	84	0.00	8.17
45	P	Hexachlorocyclopentadiene	0.411	0.232	43.6#	49#	0.00	6.08
46	C	2,4,6-Trichlorophenol			-----NA-----			
47	T	2,4,5-Trichlorophenol			-----NA-----			
48	S	2-Fluorobiphenyl	1.373	1.399	-1.9	85	0.00	6.22
49	T	2-Chloronaphthalene	1.097	1.190	-8.5	91	0.00	6.30
50	M	Acenaphthylene	1.794	1.501	16.3	69	0.00	6.67
51	T	Dimethylphthalate	1.348	1.399	-3.8	86	0.00	6.60
52	T	2,4-Dinitrotoluene	0.394	0.416	-5.6	92	-0.01	7.01
53	C	Acenaphthene	1.113	1.206	-8.4	91	0.00	6.84
54	P	2,4-Dinitrophenol			-----NA-----			
55	T	Dibenzofuran	1.720	1.792	-4.2	86	0.00	6.98
56	M	2,6-Dinitrotoluene	0.299	0.295	1.3	87	0.00	6.66
57	P	4-Nitrophenol			-----NA-----			
58	T	2,3,4,6-Tetrachlorophenol			-----NA-----			
59	T	Fluorene	1.357	1.495	-10.2	92	0.00	7.30
60	T	4-Chlorophenyl-phenylethe	0.766	0.839	-9.5	90	0.00	7.30
61	T	Diethylphthalate	1.221	1.313	-7.5	90	-0.01	7.24
62	T	2-nitroaniline	0.331	0.335	-1.2	92	0.00	6.42
63	T	3-nitroaniline	0.294	0.264	10.2	77	0.00	6.78
64	T	4-nitroaniline	0.295	0.295	0.0	87	-0.01	7.35
65		Acenaphthene-d10a	1.000	1.000	0.0	0#	-0.26	6.60
66		1,1'-Biphenyl			-----NA-----			
67	I	Phenanthrene-d10	1.000	1.000	0.0	88	0.00	8.22
68	T	4,6-Dinitro-2-methylpheno			-----NA-----			
69	C	n-Nitrosodiphenylamine	0.524	0.506	3.4	85	0.00	7.41
70	T	1,2-Diphenylhydrazine	0.481	0.451	6.2	84	0.00	7.45
71	S	2,4,6-Tribromophenol			-----NA-----			
72	T	4-Bromophenyl-phenylether	0.275	0.275	0.0	89	0.00	7.77
73	T	Hexachlorobenzene	0.301	0.313	-4.0	91	0.00	7.92
74	C	Pentachlorophenol			-----NA-----			
75	T	Phenanthrene	1.083	1.134	-4.7	91	0.00	8.24
76	T	Anthracene	1.131	1.147	-1.4	87	0.00	8.29
77	T	Carbazole	0.969	1.039	-7.2	93	0.00	8.46
78	T	Di-n-butylphthalate	1.095	1.067	2.6	87	0.00	8.89
79	C	Fluoranthene	1.267	1.437	-13.4	98	0.00	9.53
80	I	Phenanthrene-d10a	1.000	1.000	0.0	0#	0.00	8.27
81		Atrazine			-----NA-----			
82	I	Chrysene-d12	1.000	1.000	0.0	95	0.00	11.20
83	T	Benzidine			-----NA-----			
84	M	Pyrene	1.061	1.071	-0.9	93	0.00	9.78
85	S	Terphenyl-d14	0.922	0.885	4.0	88	0.00	9.98
86		3,3-Dimethylbenzidine			-----NA-----			
87	T	Butylbenzylphthalate	0.319	0.307	3.8	96	0.00	10.60
88	T	3,3'-Dichlorobenzidine			-----NA-----			
89	T	Benzo[a]anthracene	1.057	1.145	-8.3	100	0.00	11.18
90	T	Chrysene	1.033	1.076	-4.2	97	0.00	11.23

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91	T	bis(2-Ethylhexyl)phthalat	0.489	0.457	6.5	94	0.00	11.32
92	I	Perylene-d12	1.000	1.000	0.0	94	0.00	12.79
93	C	Di-n-octylphthalate	0.753	0.778	-3.3	100	0.00	12.01
94	T	Benzo[b]fluoranthene	1.199	1.230	-2.6	99	0.00	12.40
95	T	Benzo[k]fluoranthene	1.183	1.256	-6.2	96	-0.01	12.42
96	C	Benzo[a]pyrene	1.059	1.015	4.2	84	-0.01	12.73
97	T	Indeno[1,2,3-cd]pyrene	1.364	1.430	-4.8	97	-0.02	13.97
98	T	Dibenz[a,h]anthracene	1.126	1.216	-8.0	99	-0.01	13.98
99	T	Benzo[g,h,i]perylene	1.139	1.192	-4.7	99	-0.01	14.29

(#) = Out of Range
w12583.D W130530_8270+.m

SPCC's out = 2 CCC's out = 6
Fri May 31 15:36:06 2013

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12590.D Vial: 11
 Acq On : 30 May 2013 1:22 pm Operator: kristinr
 Sample : ICV579-20 Inst : MSW
 Misc : op33225,msw579,,,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\W130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 18:03:11 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	0.00	4.21
2	N-nitrosodimethylamine			NA			
3 T	Pyridine			NA			
4 T	Aniline	0.559	0.531	5.0	75	0.00	3.98
5 S	2-Fluorophenol			NA			
6 T	bis(2-Chloroethyl)ether			NA			
7 S	Phenol-d5			NA			
8 C	Phenol			NA			
9 M	2-Chlorophenol			NA			
10 T	1,3-Dichlorobenzene			NA			
11 C	1,4-Dichlorobenzene			NA			
12 T	1,2-Dichlorobenzene			NA			
13 T	Benzyl alcohol			NA			
14 T	bis(2-chloroisopropyl)eth			NA			
15 T	o-cresol			NA			
16 T	Acetophenone			NA			
17 T	Hexachloroethane			NA			
18 P	N-Nitroso-di-n-propylamin			NA			
19 T	m+p-cresols			NA			
20	4-methylphenol			NA			
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0#	-0.06	4.21
22	Benzaldehyde			NA			
23 I	Naphthalene-d8	1.000	1.000	0.0	81	0.00	5.27
24 S	Nitrobenzene-d5			NA			
25 T	Nitrobenzene			NA			
26 T	Isophorone			NA			
27 C	2-Nitrophenol			NA			
28 T	2,4-Dimethylphenol			NA			
29 T	bis(2-Chloroethoxy)methan			NA			
	----- Amount	Calc.	%Drift	-----			
30 T	Benzoic acid			NA			
	----- AvgRF	CCRF	%Dev	-----			
31 C	2,4-Dichlorophenol			NA			
32 M	1,2,4-Trichlorobenzene			NA			
33 T	Naphthalene			NA			
34 T	2,6-Dichlorophenol			NA			
35 T	4-Chloroaniline	0.439	0.399	9.1	72	0.00	5.35
36 C	Hexachlorobutadiene			NA			

9.7.4
9

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37	C	4-Chloro-3-methylphenol				-----NA-----		
38	T	2-Methylnaphthalene				-----NA-----		
39	T	1-Methylnaphthalene				-----NA-----		
40	T	1,2,4,5-Tetrachlorobenzen				-----NA-----		
41	I	Naphthalene-d8a	1.000	1.000	0.0	0# -0.06	5.27	
42		Caprolactam				-----NA-----		
43	I	Acenaphthene-d10	1.000	1.000	0.0	78 0.00	6.81	
44	T	Pentachloronitrobenzene				-----NA-----		
45	P	Hexachlorocyclopentadiene				-----NA-----		
46	C	2,4,6-Trichlorophenol				-----NA-----		
47	T	2,4,5-Trichlorophenol				-----NA-----		
48	S	2-Fluorobiphenyl				-----NA-----		
49	T	2-Chloronaphthalene				-----NA-----		
50	M	Acenaphthylene				-----NA-----		
51	T	Dimethylphthalate				-----NA-----		
52	T	2,4-Dinitrotoluene				-----NA-----		
53	C	Acenaphthene				-----NA-----		
54	P	2,4-Dinitrophenol				-----NA-----		
55	T	Dibenzofuran				-----NA-----		
56	M	2,6-Dinitrotoluene				-----NA-----		
57	P	4-Nitrophenol				-----NA-----		
58	T	2,3,4,6-Tetrachlorophenol				-----NA-----		
59	T	Fluorene				-----NA-----		
60	T	4-Chlorophenyl-phenylethe				-----NA-----		
61	T	Diethylphthalate				-----NA-----		
62	T	2-nitroaniline				-----NA-----		
63	T	3-nitroaniline				-----NA-----		
64	T	4-nitroaniline				-----NA-----		
65		Acenaphthene-d10a	1.000	1.000	0.0	0# -0.05	6.81	
66		1,1'-Biphenyl				-----NA-----		
67	I	Phenanthrene-d10	1.000	1.000	0.0	79 0.00	8.22	
68	T	4,6-Dinitro-2-methylpheno				-----NA-----		
69	C	n-Nitrosodiphenylamine				-----NA-----		
70	T	1,2-Diphenylhydrazine				-----NA-----		
71	S	2,4,6-Tribromophenol				-----NA-----		
72	T	4-Bromophenyl-phenylether				-----NA-----		
73	T	Hexachlorobenzene				-----NA-----		
74	C	Pentachlorophenol				-----NA-----		
75	T	Phenanthrene				-----NA-----		
76	T	Anthracene				-----NA-----		
77	T	Carbazole				-----NA-----		
78	T	Di-n-butylphthalate				-----NA-----		
79	C	Fluoranthene				-----NA-----		
80	I	Phenanthrene-d10a	1.000	1.000	0.0	0# 0.00	8.27	
81		Atrazine				-----NA-----		
82	I	Chrysene-d12	1.000	1.000	0.0	85 -0.01	11.20	
83	T	Benzidine	0.264	0.405	-53.4#	129 0.00	9.68	
84	M	Pyrene				-----NA-----		
85	S	Terphenyl-d14				-----NA-----		
86		3,3-Dimethylbenzidine				-----NA-----		
87	T	Butylbenzylphthalate				-----NA-----		
88	T	3,3'-Dichlorobenzidine	0.406	0.374	7.9	80 0.00	11.17	
89	T	Benzo[a]anthracene				-----NA-----		
90	T	Chrysene				-----NA-----		

Initial Calibration Verification

Job Number: JB37539

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91	T	bis(2-Ethylhexyl)phthalat			-----NA-----			
92	I	Perylene-d12	1.000	1.000	0.0	88	0.00	12.79
93	C	Di-n-octylphthalate			-----NA-----			
94	T	Benzo[b]fluoranthene			-----NA-----			
95	T	Benzo[k]fluoranthene			-----NA-----			
96	C	Benzo[a]pyrene			-----NA-----			
97	T	Indeno[1,2,3-cd]pyrene			-----NA-----			
98	T	Dibenz[a,h]anthracene			-----NA-----			
99	T	Benzo[g,h,i]perylene			-----NA-----			

(#) = Out of Range
w12583.D W130530_8270+.m

SPCC's out = 4 CCC's out = 13
Fri May 31 15:36:08 2013

Continuing Calibration Summary

Job Number: JB37539

Sample: MSW587-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12747.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130603\W12747.D Vial: 96
 Acq On : 3 Jun 2013 6:24 pm Operator: kristinr
 Sample : CC579-80 Inst : MSW
 Misc : OP33195,MSW587,,,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\W130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 18:03:11 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	0.05	4.26
2	N-nitrosodimethylamine	0.628	0.563	10.4	73	0.06	2.40
3 T	Pyridine	1.179	1.054	10.6	75	0.06	2.41
4 T	Aniline	0.559	0.504	9.8	77	0.05	4.03
5 S	2-Fluorophenol	1.083	1.054	2.7	82	0.06	3.32
6 T	bis(2-Chloroethyl)ether	0.675	0.610	9.6	75	0.05	4.07
7 S	Phenol-d5	1.320	1.279	3.1	81	0.06	4.00
8 C	Phenol	1.408	1.456	-3.4	84	0.06	4.01
9 M	2-Chlorophenol	1.289	1.269	1.6	81	0.06	4.12
10 T	1,3-Dichlorobenzene	1.484	1.471	0.9	83	0.05	4.24
11 C	1,4-Dichlorobenzene	1.568	1.539	1.8	82	0.05	4.27
12 T	1,2-Dichlorobenzene	1.431	1.411	1.4	81	0.05	4.43
13 T	Benzyl alcohol	0.798	0.770	3.5	79	0.05	4.39
14 T	bis(2-chloroisopropyl)eth	0.887	0.765	13.8	72	0.04	4.50
15 T	o-cresol	1.091	1.079	1.1	81	0.05	4.49
16 T	Acetophenone	1.718	1.583	7.9	79	0.06	4.61
17 T	Hexachloroethane	0.493	0.478	3.0	80	0.05	4.68
18 P	N-Nitroso-di-n-propylamin	0.721	0.664	7.9	74	0.05	4.63
19 T	m+p-cresols	1.179	1.138	3.5	80	0.06	4.61
20	4-methylphenol	1.179	1.138	3.5	80	0.06	4.61
21 I	1,4-Dichlorobenzene-d4A	-----NA-----					
22	Benzaldehyde	-----NA-----					
23 I	Naphthalene-d8	1.000	1.000	0.0	81	0.05	5.33
24 S	Nitrobenzene-d5	0.295	0.286	3.1	78	0.05	4.74
25 T	Nitrobenzene	0.304	0.297	2.3	78	0.05	4.75
26 T	Isophorone	0.565	0.530	6.2	76	0.05	4.95
27 C	2-Nitrophenol	0.196	0.208	-6.1	82	0.05	5.02
28 T	2,4-Dimethylphenol	0.332	0.328	1.2	80	0.06	5.04
29 T	bis(2-Chloroethoxy)methan	0.356	0.336	5.6	77	0.05	5.12
		----- Amount	Calc.	%Drift	-----		
30 T	Benzoic acid	80.000	82.876	-3.6	83	0.07	5.16
		----- AvgRF	CCRF	%Dev	-----		
31 C	2,4-Dichlorophenol	0.345	0.349	-1.2	81	0.06	5.21
32 M	1,2,4-Trichlorobenzene	0.383	0.380	0.8	81	0.05	5.29
33 T	Naphthalene	1.033	1.005	2.7	80	0.05	5.34
34 T	2,6-Dichlorophenol	0.342	0.345	-0.9	81	0.05	5.41
35 T	4-Chloroaniline	0.439	0.434	1.1	79	0.05	5.40
36 C	Hexachlorobutadiene	0.249	0.246	1.2	81	0.05	5.49

9.7.5
9

Continuing Calibration Summary

Job Number: JB37539

Sample:

MSW587-CC579

Account: ALNJ Accutest New Jersey

Lab FileID:

W12747.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37	C	4-Chloro-3-methylphenol	0.295	0.290	1.7	79	0.06	5.81
38	T	2-Methylnaphthalene	0.768	0.760	1.0	81	0.06	5.94
39	T	1-Methylnaphthalene	0.737	0.716	2.8	81	0.05	6.03
40	T	1,2,4,5-Tetrachlorobenzen	0.475	0.456	4.0	80	0.05	6.11
41	I	Naphthalene-d8a					-----NA-----	
42		Caprolactam					-----NA-----	
43	I	Acenaphthene-d10	1.000	1.000	0.0	80	0.05	6.86
44	T	Pentachloronitrobenzene	0.185	0.179	3.2	78	0.06	8.24
45	P	Hexachlorocyclopentadiene	0.411	0.451	-9.7	80	0.05	6.13
46	C	2,4,6-Trichlorophenol	0.436	0.442	-1.4	81	0.06	6.20
47	T	2,4,5-Trichlorophenol	0.464	0.471	-1.5	80	0.06	6.23
48	S	2-Fluorobiphenyl	1.373	1.353	1.5	81	0.05	6.27
49	T	2-Chloronaphthalene	1.097	1.103	-0.5	81	0.05	6.36
50	M	Acenaphthylene	1.794	1.790	0.2	80	0.05	6.73
51	T	Dimethylphthalate	1.348	1.320	2.1	79	0.05	6.65
52	T	2,4-Dinitrotoluene	0.394	0.408	-3.6	81	0.05	7.07
53	C	Acenaphthene	1.113	1.118	-0.4	81	0.05	6.89
54	P	2,4-Dinitrophenol	0.230	0.248	-7.8	82	0.05	6.93
55	T	Dibenzofuran	1.720	1.714	0.3	81	0.05	7.04
56	M	2,6-Dinitrotoluene	0.299	0.311	-4.0	79	0.05	6.72
57	P	4-Nitrophenol	0.183	0.178	2.7	77	0.07	6.99
58	T	2,3,4,6-Tetrachlorophenol	0.463	0.471	-1.7	81	0.05	7.19
59	T	Fluorene	1.357	1.343	1.0	80	0.05	7.36
60	T	4-Chlorophenyl-phenylethe	0.766	0.762	0.5	80	0.05	7.35
61	T	Diethylphthalate	1.221	1.177	3.6	77	0.04	7.29
62	T	2-nitroaniline	0.331	0.306	7.6	71	0.42	6.84
63	T	3-nitroaniline	0.294	0.306	-4.1	82	0.06	6.84
64	T	4-nitroaniline	0.295	0.321	-8.8	85	0.06	7.42
65		Acenaphthene-d10a					-----NA-----	
66		1,1'-Biphenyl					-----NA-----	
67	I	Phenanthrene-d10	1.000	1.000	0.0	80	0.05	8.28
68	T	4,6-Dinitro-2-methylpheno	0.159	0.171	-7.5	82	0.06	7.45
69	C	n-Nitrosodiphenylamine	0.524	0.518	1.1	80	0.05	7.47
70	T	1,2-Diphenylhydrazine	0.481	0.443	7.9	76	0.05	7.51
71	S	2,4,6-Tribromophenol	0.161	0.167	-3.7	82	0.06	7.61
72	T	4-Bromophenyl-phenylether	0.275	0.282	-2.5	81	0.06	7.82
73	T	Hexachlorobenzene	0.301	0.307	-2.0	81	0.05	7.98
74	C	Pentachlorophenol	0.218	0.221	-1.4	80	0.06	8.15
75	T	Phenanthrene	1.083	1.067	1.5	81	0.06	8.31
76	T	Anthracene	1.131	1.120	1.0	81	0.06	8.36
77	T	Carbazole	0.969	0.983	-1.4	83	0.07	8.53
78	T	Di-n-butylphthalate	1.095	1.094	0.1	79	0.06	8.95
79	C	Fluoranthene	1.267	1.271	-0.3	82	0.07	9.60
80	I	Phenanthrene-d10a					-----NA-----	
81		Atrazine					-----NA-----	
82	I	Chrysene-d12	1.000	1.000	0.0	85	0.07	11.27
83	T	Benzidine	0.264	0.398	-50.8#	118	0.06	9.75
84	M	Pyrene	1.061	1.042	1.8	83	0.07	9.85
85	S	Terphenyl-d14	0.922	0.893	3.1	83	0.06	10.04
86		3,3-Dimethylbenzidine	0.394	0.531	-34.8#	103	0.06	10.61
87	T	Butylbenzylphthalate	0.319	0.370	-16.0	90	0.06	10.66
88	T	3,3'-Dichlorobenzidine	0.406	0.467	-15.0	90	0.07	11.25
89	T	Benzo[a]anthracene	1.057	1.043	1.3	85	0.07	11.25
90	T	Chrysene	1.033	1.013	1.9	85	0.07	11.30

Continuing Calibration Summary

Job Number: JB37539

Sample: MSW587-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12747.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91	T	bis(2-Ethylhexyl)phthalat	0.489	0.542	-10.8	85	0.05	11.37
92	I	Perylene-d12	1.000	1.000	0.0	87	0.07	12.86
93	C	Di-n-octylphthalate	0.753	0.894	-18.7	93	0.06	12.07
94	T	Benzo[b]fluoranthene	1.199	1.312	-9.4	88	0.07	12.47
95	T	Benzo[k]fluoranthene	1.183	1.039	12.2	86	0.07	12.50
96	C	Benzo[a]pyrene	1.059	1.076	-1.6	85	0.07	12.81
97	T	Indeno[1,2,3-cd]pyrene	1.364	1.429	-4.8	87	0.10	14.09
98	T	Dibenz[a,h]anthracene	1.126	1.176	-4.4	87	0.10	14.10
99	T	Benzo[g,h,i]perylene	1.139	1.160	-1.8	86	0.11	14.42

(#) = Out of Range

w12585.D W130530_8270+.m

SPCC's out = 0 CCC's out = 0

Mon Jun 03 19:06:11 2013

GC/MS Semi-volatiles

Raw Data

(Accutest Labs of New England, Inc.)

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
Data File : W12768.D
Acq On : 4 Jun 2013 2:44 am
Operator : kristinr
Sample : jb37539-1
Misc : OP33426,MSW587,20.05,,,1,5
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Jun 12 15:02:01 2013
Quant Method : C:\msdchem\1\methods\W130530_8270+.m
Quant Title : SW-864 Method 8270
QLast Update : Thu Jun 06 09:42:09 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.263	152	49924	40.00	ppm	0.05
21) 1,4-Dichlorobenzene-d4A	4.263	152	49924	40.00	PPM	# 0.00
23) Naphthalene-d8	5.321	136	182884	40.00	ppm	0.05
41) Naphthalene-d8a	5.321	136	182884	40.00	ppm	# 0.00
43) Acenaphthene-d10	6.859	164	124089	40.00	ppm	0.04
65) Acenaphthene-d10a	6.859	164	124089	40.00	ppm	# 0.00
67) Phenanthrene-d10	8.275	188	232751	40.00	ppm	0.05
80) Phenanthrene-d10a	8.275	188	232751m	40.00	ppm	0.01
82) Chrysene-d12	11.267	240	296013	40.00	ppm	0.06
92) Perylene-d12	12.869	264	296071	40.00	ppm	0.08
System Monitoring Compounds						
5) 2-Fluorophenol	3.323	112	7969	5.89	ppm	0.07
Spiked Amount	100.000	Range	30 - 130	Recovery	=	5.89%#
7) Phenol-d5	4.001	99	8751	5.31	ppm	0.06
Spiked Amount	100.000	Range	30 - 130	Recovery	=	5.31%#
24) Nitrobenzene-d5	4.733	82	7555	5.59	ppm	0.05
Spiked Amount	50.000	Range	30 - 130	Recovery	=	11.18%#
48) 2-Fluorobiphenyl	6.261	172	26264	6.17	ppm	0.04
Spiked Amount	50.000	Range	30 - 130	Recovery	=	12.34%#
71) 2,4,6-Tribromophenol	7.607	330	5442	5.80	ppm	0.06
Spiked Amount	100.000	Range	30 - 130	Recovery	=	5.80%#
85) Terphenyl-d14	10.038	244	44221	6.48	ppm	0.06
Spiked Amount	50.000	Range	30 - 130	Recovery	=	12.96%#
Target Compounds						
99) Benzo[g,h,i]perylene	14.403	276	5135	0.61	ppm	Qvalue 85

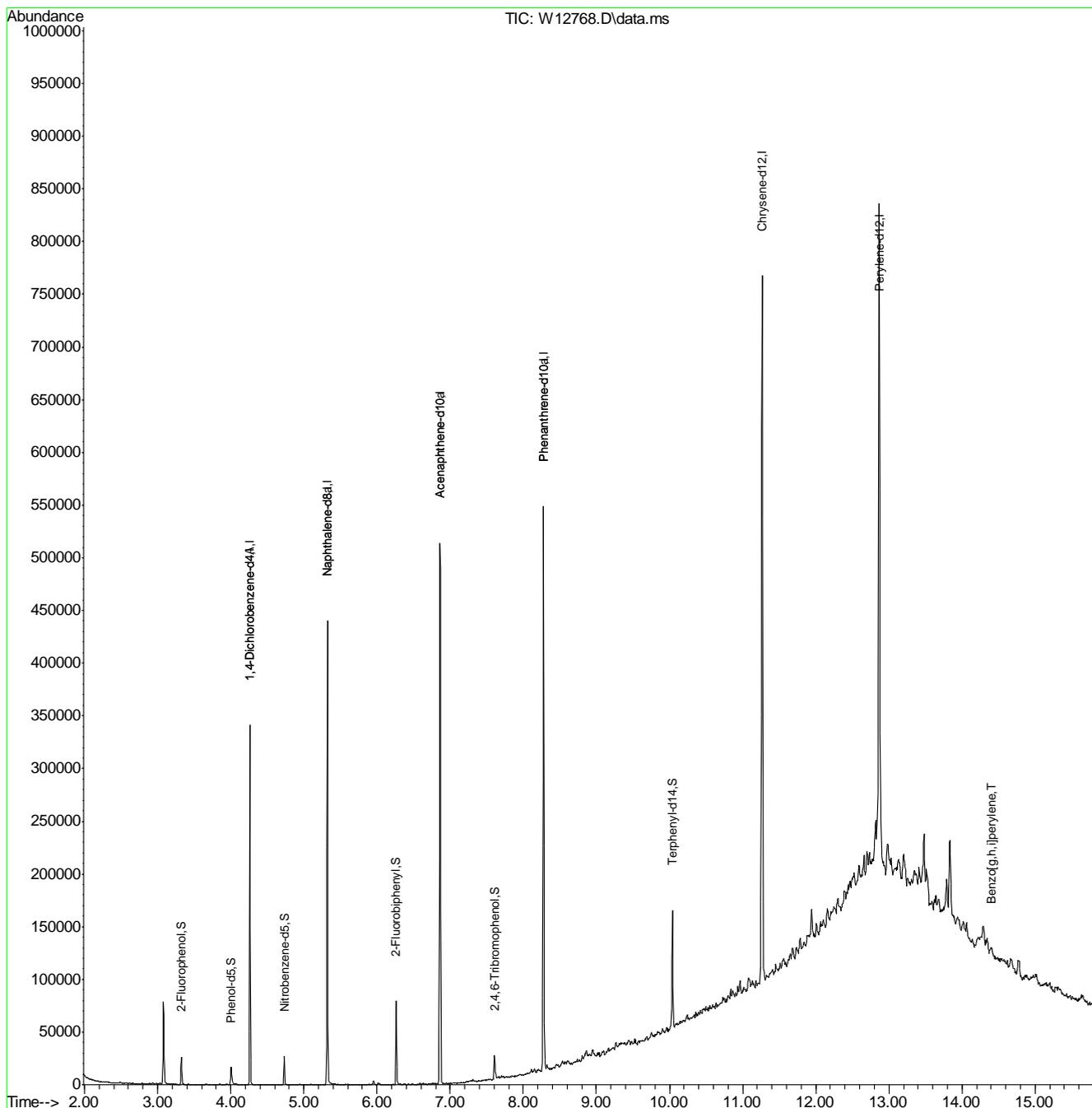
(#) = qualifier out of range (m) = manual integration (+) = signals summed

10.1.1
10

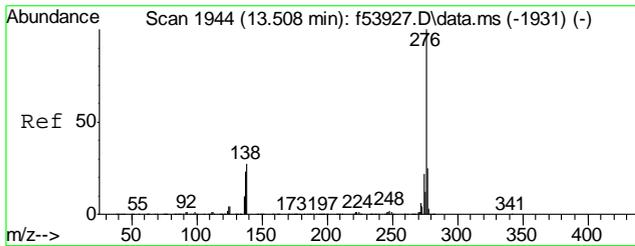
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12768.D
 Acq On : 4 Jun 2013 2:44 am
 Operator : kristinr
 Sample : jb37539-1
 Misc : OP33426,MSW587,20.05,,,1,5
 ALS Vial : 37 Sample Multiplier: 1

Quant Time: Jun 12 15:02:01 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

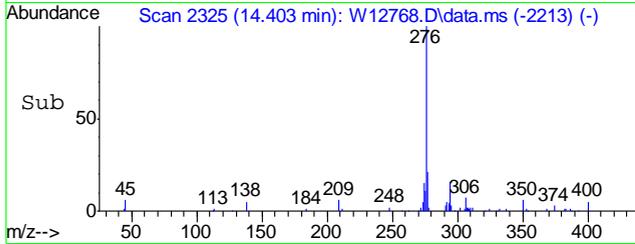
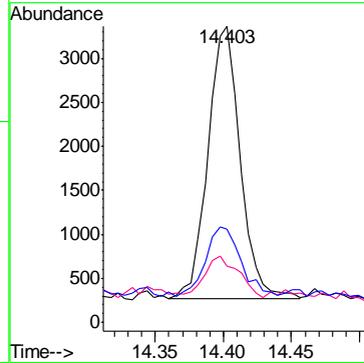
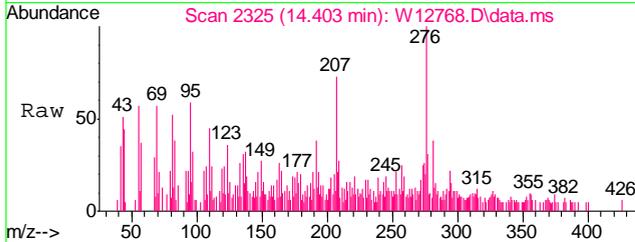


10.1.1
10



#99
 Benzo[g,h,i]perylene
 Concen: 0.61 ppm
 RT: 14.403 min Scan# 2325
 Delta R.T. 0.098 min
 Lab File: W12768.D
 Acq: 4 Jun 2013 2:44 am

Tgt Ion	Resp	Lower	Upper
276	100		
138	10.2	0.0	54.4
277	23.0	0.0	53.5



10.1.1 10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12769.D
 Acq On : 4 Jun 2013 3:08 am
 Operator : kristinr
 Sample : jB37539-2
 Misc : OP33426,MSW587,20.93,,,1,1
 ALS Vial : 38 Sample Multiplier: 1

Quant Time: Jun 12 15:04:02 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
Internal Standards							
1) 1,4-Dichlorobenzene-d4	4.263	152	54459	40.00	ppm	0.05	
21) 1,4-Dichlorobenzene-d4A	4.263	152	54289m	40.00	PPM	0.00	
23) Naphthalene-d8	5.321	136	190591	40.00	ppm	0.05	
41) Naphthalene-d8a	5.321	136	189749m	40.00	ppm	0.00	
43) Acenaphthene-d10	6.865	164	127217	40.00	ppm	0.05	
65) Acenaphthene-d10a	6.865	164	127217	40.00	ppm	# 0.00	
67) Phenanthrene-d10	8.286	188	228639	40.00	ppm	0.06	
80) Phenanthrene-d10a	8.286	188	228475m	40.00	ppm	0.02	
82) Chrysene-d12	11.272	240	290605	40.00	ppm	0.07	
92) Perylene-d12	12.870	264	298926	40.00	ppm	0.08	
System Monitoring Compounds							
5) 2-Fluorophenol	3.323	112	38679	26.23	ppm	0.07	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	26.23%#	
7) Phenol-d5	4.002	99	44573	24.80	ppm	0.06	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	24.80%#	
24) Nitrobenzene-d5	4.733	82	36475	25.92	ppm	0.05	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	51.84%	
48) 2-Fluorobiphenyl	6.267	172	121059	27.72	ppm	0.05	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	55.44%	
71) 2,4,6-Tribromophenol	7.613	330	27321	29.63	ppm	0.06	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	29.63%#	
85) Terphenyl-d14	10.049	244	194082	28.98	ppm	0.07	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	57.96%	
Target Compounds							
53) Acenaphthene	6.892	153	5415m	1.53	ppm		Qvalue
59) Fluorene	7.362	166	12475m	2.89	ppm		
75) Phenanthrene	8.307	178	38768	6.26	ppm	98	
76) Anthracene	8.355	178	8558m	1.32	ppm		
84) Pyrene	9.851	202	24166	3.14	ppm	89	
89) Benzo[a]anthracene	11.251	228	7049	0.92	ppm	84	
90) Chrysene	11.294	228	12522	1.67	ppm	82	
91) bis(2-Ethylhexyl)phtha...	11.374	149	5711	1.61	ppm	87	
96) Benzo[a]pyrene	12.806	252	4089	0.52	ppm	78	
99) Benzo[g,h,i]perylene	14.398	276	2087	0.25	ppm	78	

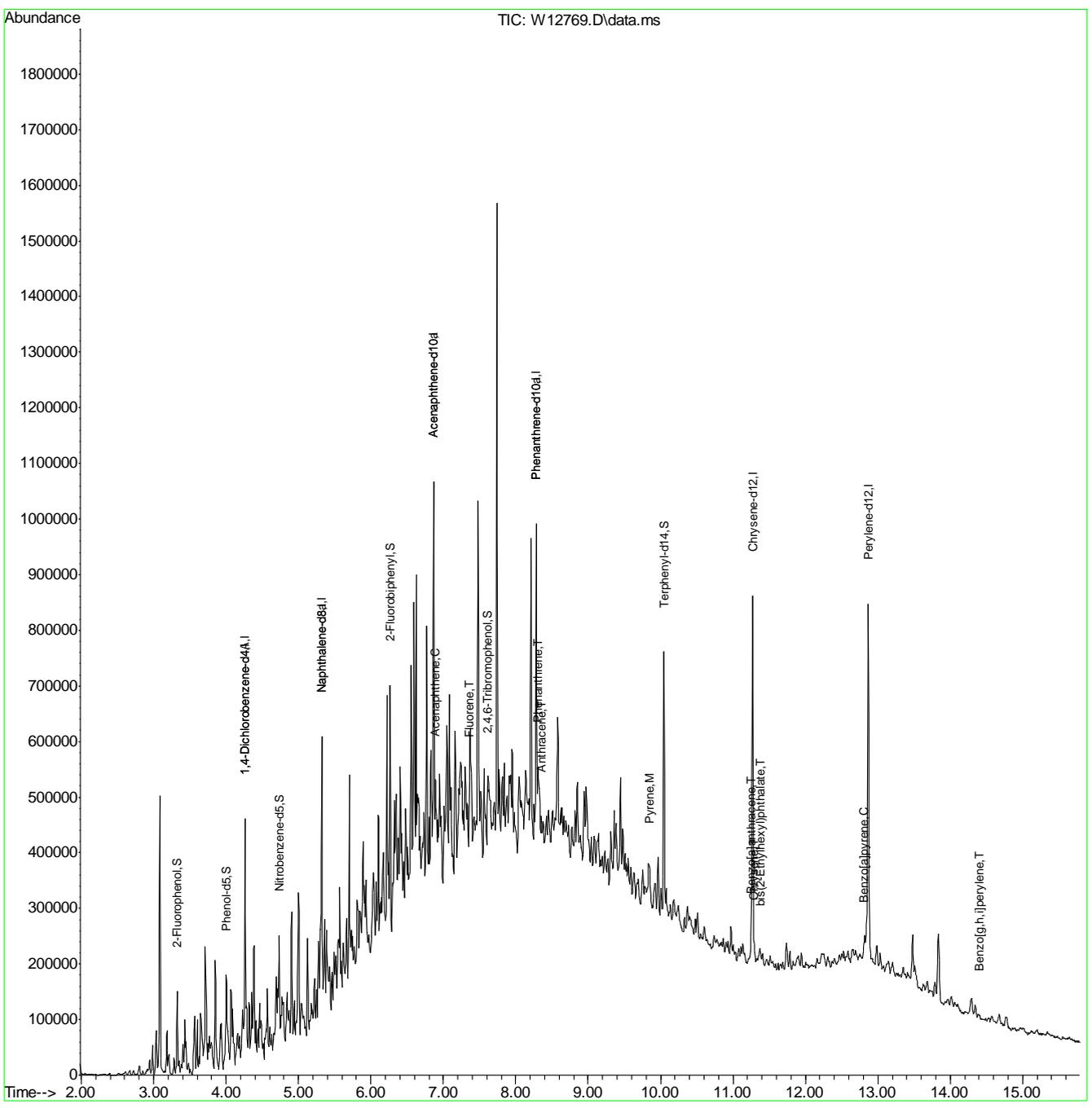
(#) = qualifier out of range (m) = manual integration (+) = signals summed

10.12
10

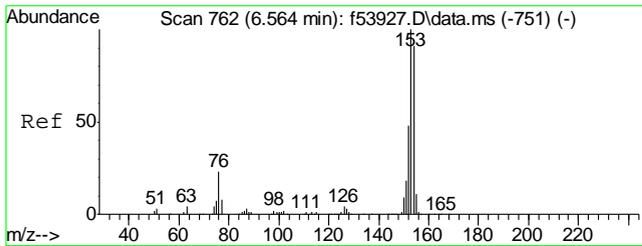
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
Data File : W12769.D
Acq On : 4 Jun 2013 3:08 am
Operator : kristinr
Sample : jb37539-2
Misc : OP33426,MSW587,20.93,,,1,1
ALS Vial : 38 Sample Multiplier: 1

Quant Time: Jun 12 15:04:02 2013
Quant Method : C:\msdchem\1\methods\W130530_8270+.m
Quant Title : SW-864 Method 8270
QLast Update : Thu Jun 06 09:42:09 2013
Response via : Initial Calibration

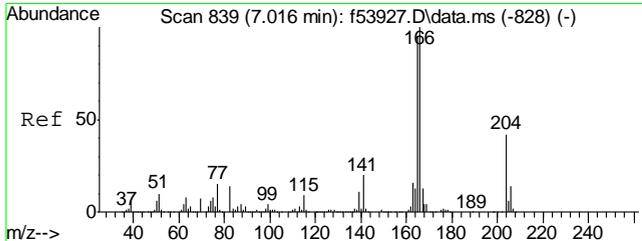
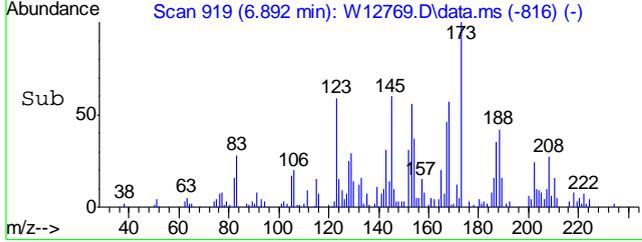
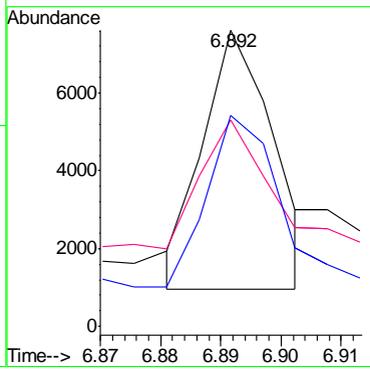
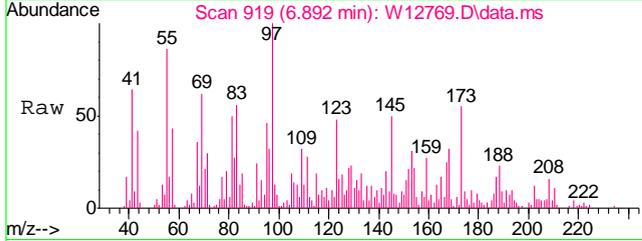


10.12 10



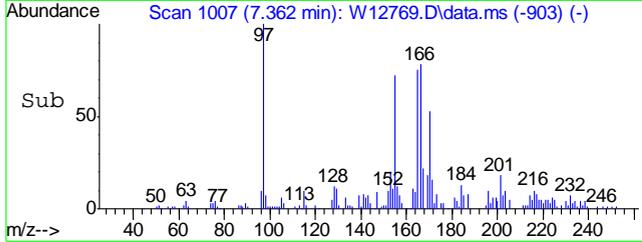
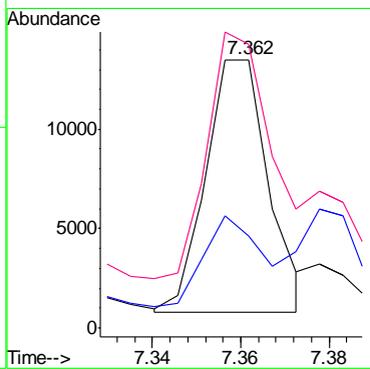
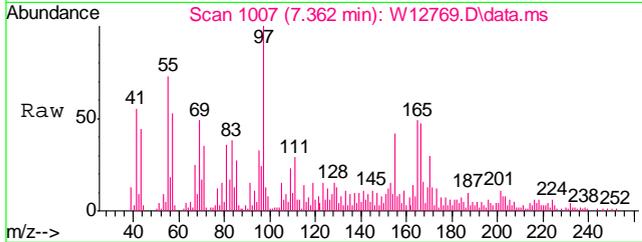
#53
 Acenaphthene
 Concen: 1.53 ppm m
 RT: 6.892 min Scan# 919
 Delta R.T. 0.050 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
153	5415	100	
152	69.7	17.6	77.6
154	71.1	62.0	122.0

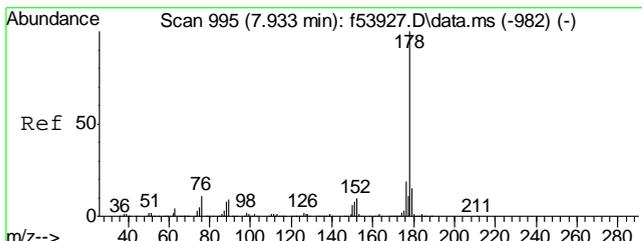


#59
 Fluorene
 Concen: 2.89 ppm m
 RT: 7.362 min Scan# 1007
 Delta R.T. 0.055 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
166	12475	100	
165	106.0	66.3	126.3
167	34.3	0.0	43.2

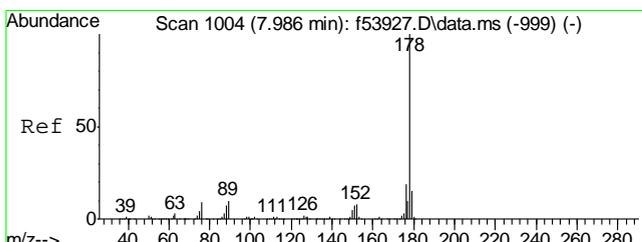
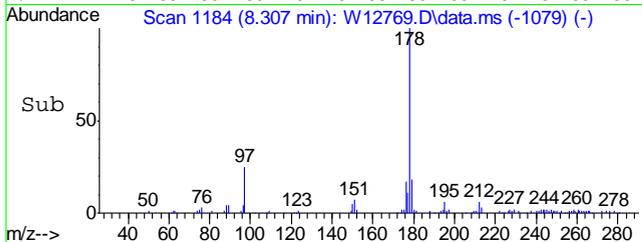
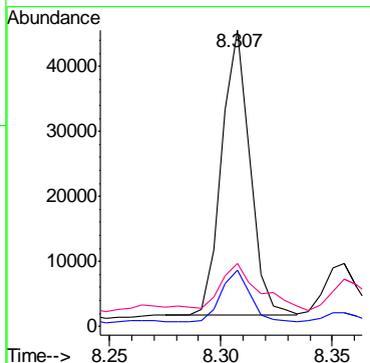
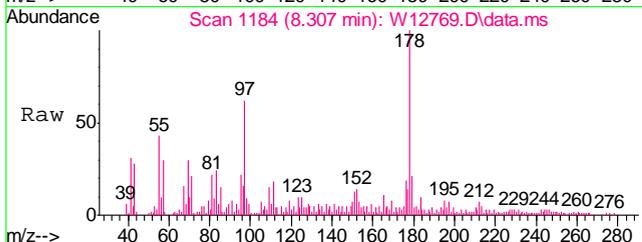


10.12 10



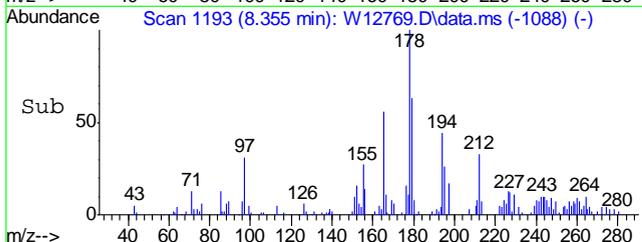
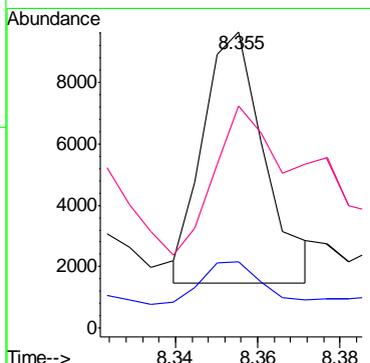
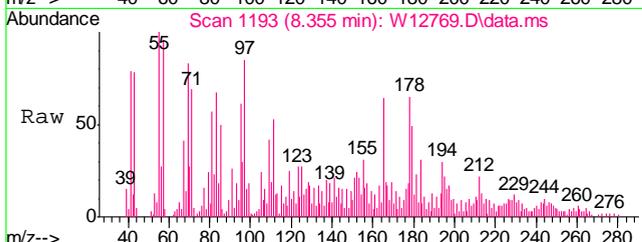
#75
 Phenanthrene
 Concen: 6.26 ppm
 RT: 8.307 min Scan# 1184
 Delta R.T. 0.060 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
178	38768	100	
179	15.3	0.0	45.1
176	17.9	0.0	49.3

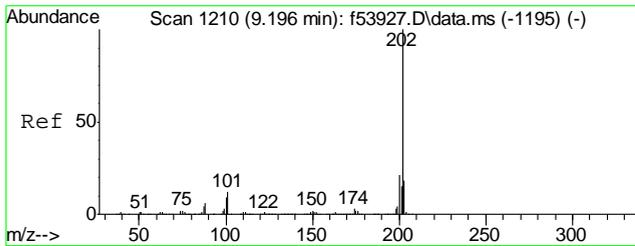


#76
 Anthracene
 Concen: 1.32 ppm m
 RT: 8.355 min Scan# 1193
 Delta R.T. 0.060 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
178	8558	100	
179	74.9	0.0	45.3#
176	22.3	0.0	48.5

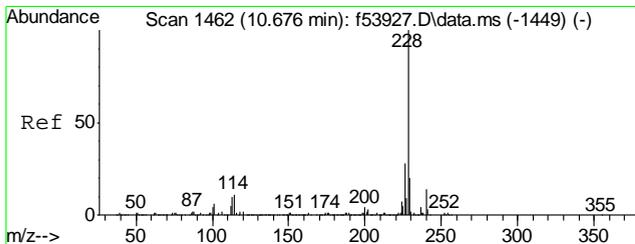
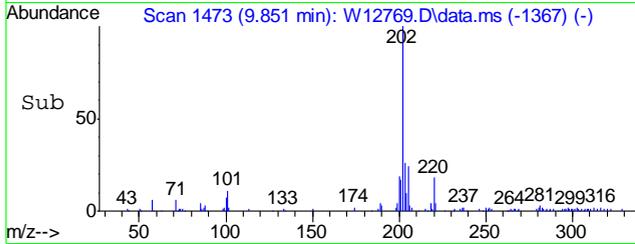
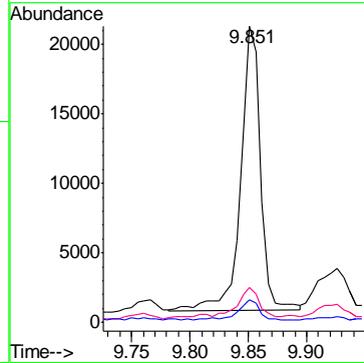
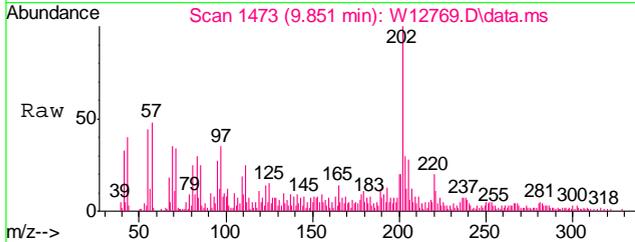


10.12 10



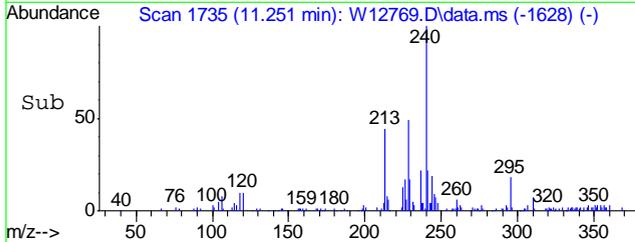
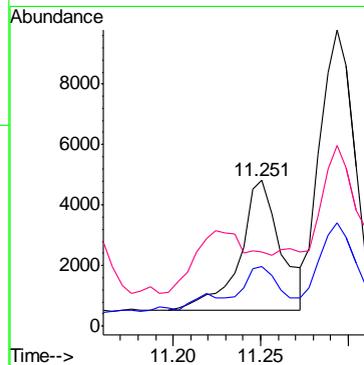
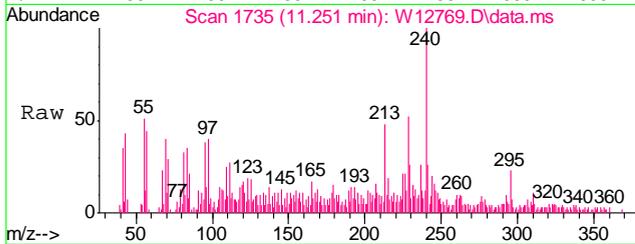
#84
 Pyrene
 Concen: 3.14 ppm
 RT: 9.851 min Scan# 1473
 Delta R.T. 0.066 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
202	24166	100	
101	10.5	0.0	44.8
100	7.1	0.0	41.9

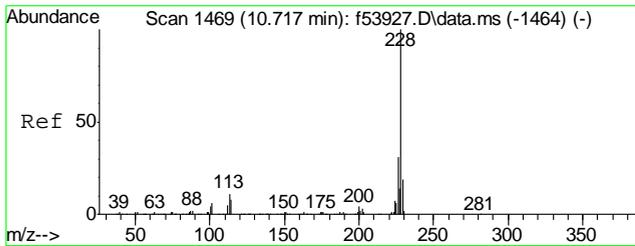


#89
 Benzo[a]anthracene
 Concen: 0.92 ppm
 RT: 11.251 min Scan# 1735
 Delta R.T. 0.071 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
228	7049	100	
229	30.4	0.0	49.6
226	31.9	0.0	56.8

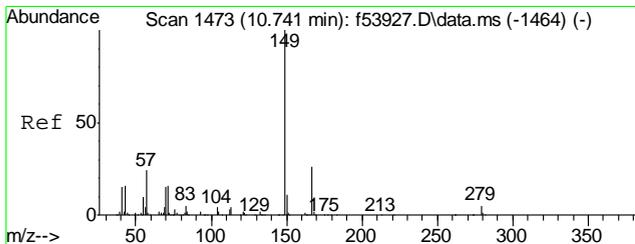
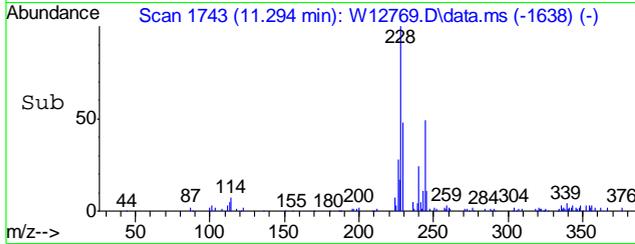
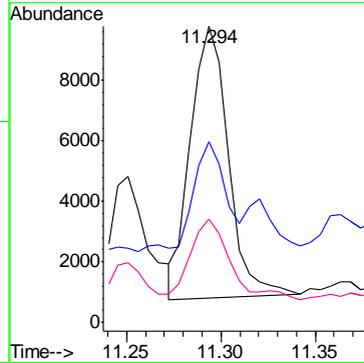
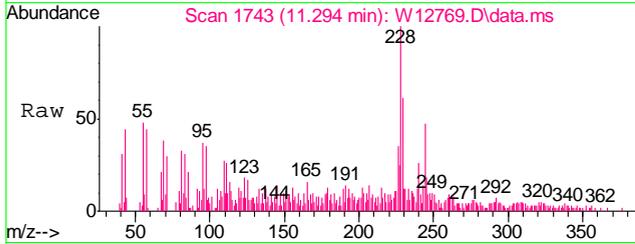


10.12
 10



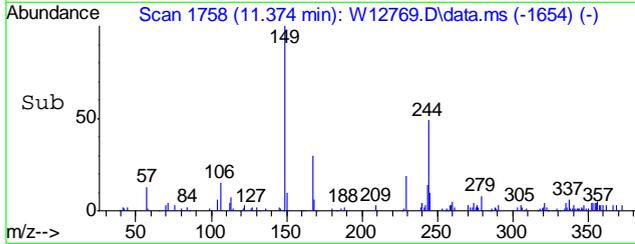
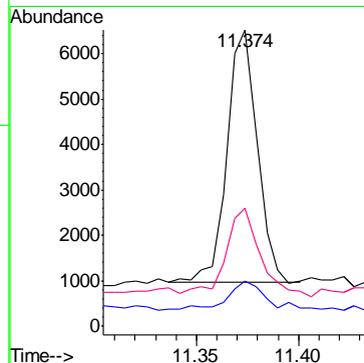
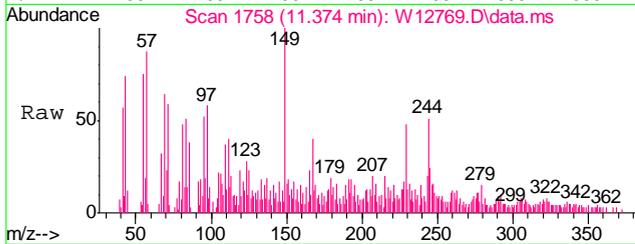
#90
 Chrysene
 Concen: 1.67 ppm
 RT: 11.294 min Scan# 1743
 Delta R.T. 0.061 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
228	12522		
226	30.2	0.0	59.8
229	39.6	0.0	49.7

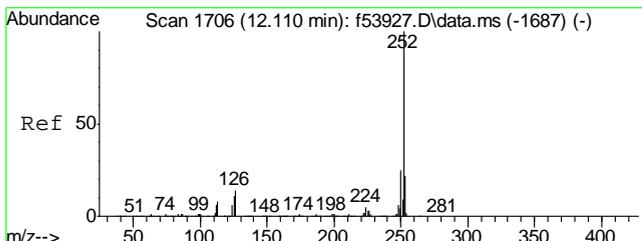


#91
 bis(2-Ethylhexyl)phthalate
 Concen: 1.61 ppm
 RT: 11.374 min Scan# 1758
 Delta R.T. 0.055 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
149	5711		
167	32.6	0.0	56.6
279	11.0	0.0	34.5

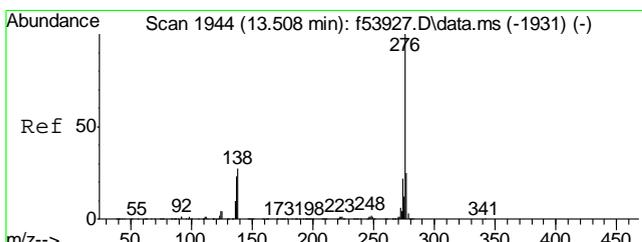
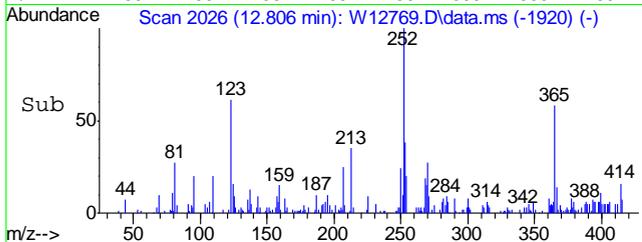
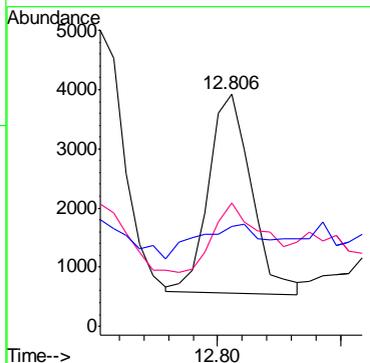
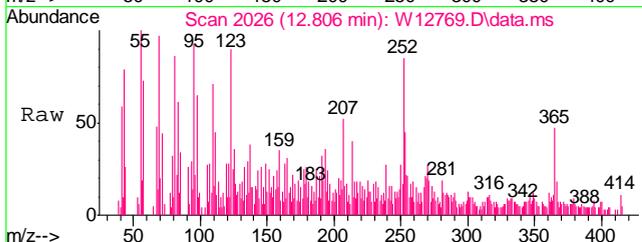


10.12 10



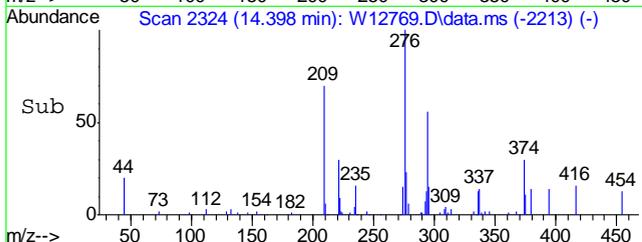
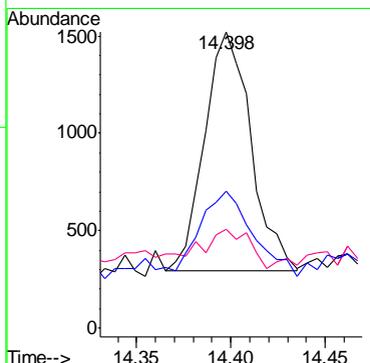
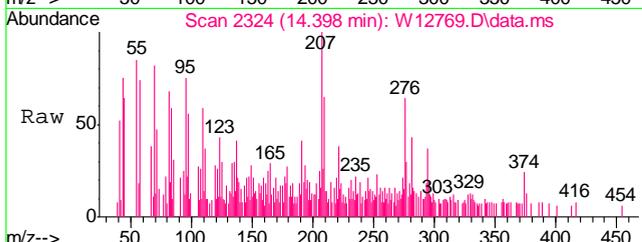
#96
 Benzo[a]pyrene
 Concen: 0.52 ppm
 RT: 12.806 min Scan# 2026
 Delta R.T. 0.066 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
252	100		
253	34.7	0.0	51.5
125	16.4	0.0	41.6



#99
 Benzo[g,h,i]perylene
 Concen: 0.25 ppm
 RT: 14.398 min Scan# 2324
 Delta R.T. 0.093 min
 Lab File: W12769.D
 Acq: 4 Jun 2013 3:08 am

Tgt Ion	Resp	Lower	Upper
276	100		
138	15.0	0.0	54.4
277	35.7	0.0	53.5



10.12 10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12770.D
 Acq On : 4 Jun 2013 3:33 am
 Operator : kristinr
 Sample : jB37539-3
 Misc : OP33426,MSW587,20.59,,,1,5
 ALS Vial : 39 Sample Multiplier: 1

Quant Time: Jun 12 15:06:08 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

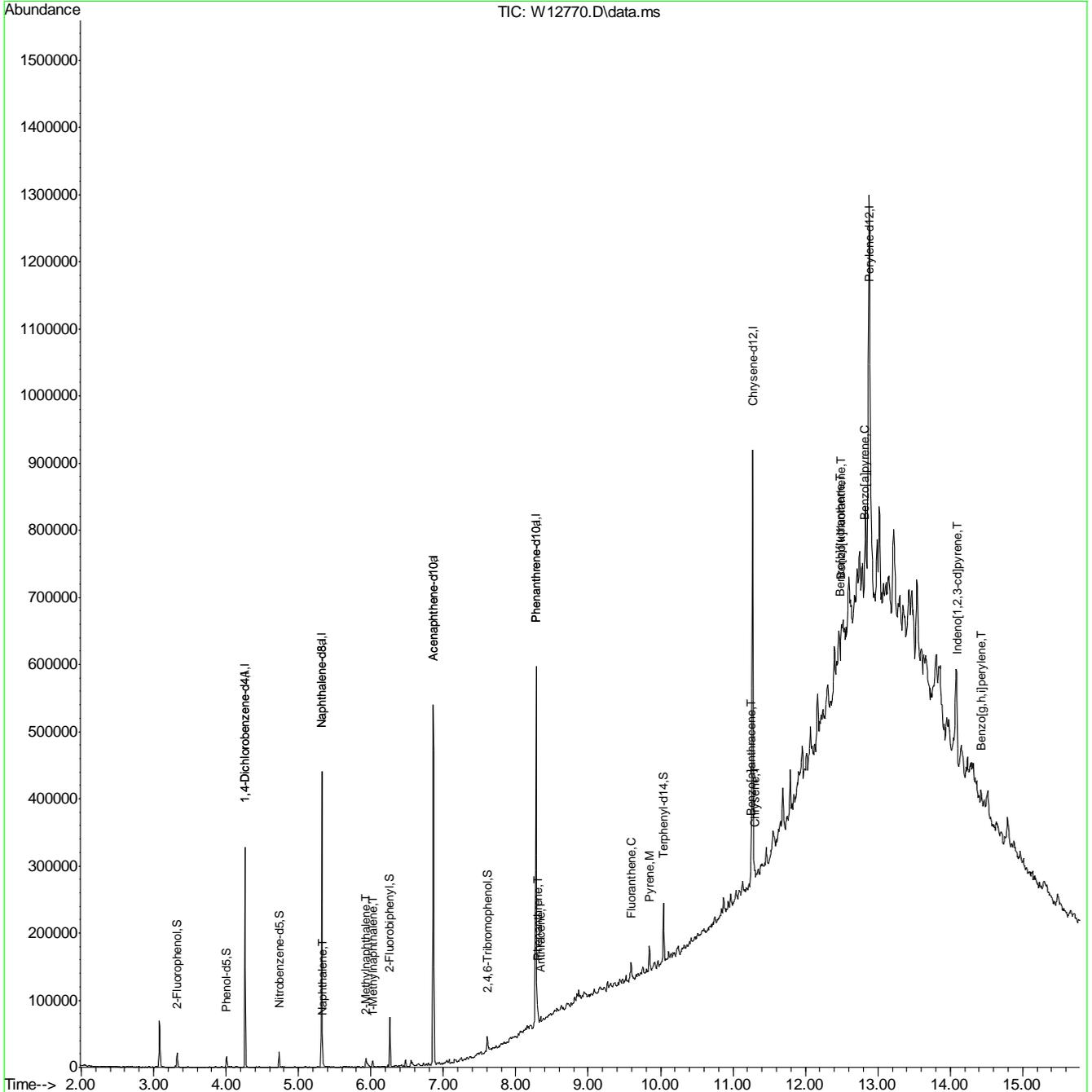
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
Internal Standards							
1) 1,4-Dichlorobenzene-d4	4.263	152	49875	40.00	ppm	0.05	
21) 1,4-Dichlorobenzene-d4A	4.263	152	49875	40.00	PPM	#	0.00
23) Naphthalene-d8	5.321	136	179922	40.00	ppm		0.05
41) Naphthalene-d8a	5.321	136	179922	40.00	ppm	#	0.00
43) Acenaphthene-d10	6.860	164	123819	40.00	ppm		0.04
65) Acenaphthene-d10a	6.860	164	123819	40.00	ppm	#	0.00
67) Phenanthrene-d10	8.281	188	228090	40.00	ppm		0.05
80) Phenanthrene-d10a	8.281	188	227807m	40.00	ppm		0.02
82) Chrysene-d12	11.272	240	286490	40.00	ppm		0.07
92) Perylene-d12	12.880	264	281743	40.00	ppm		0.09
System Monitoring Compounds							
5) 2-Fluorophenol	3.323	112	6614	4.90	ppm		0.07
Spiked Amount	100.000	Range	30 - 130	Recovery	=		4.90%#
7) Phenol-d5	4.007	99	7505	4.56	ppm		0.06
Spiked Amount	100.000	Range	30 - 130	Recovery	=		4.56%#
24) Nitrobenzene-d5	4.733	82	6443	4.85	ppm		0.05
Spiked Amount	50.000	Range	30 - 130	Recovery	=		9.70%#
48) 2-Fluorobiphenyl	6.261	172	22861	5.38	ppm		0.04
Spiked Amount	50.000	Range	30 - 130	Recovery	=		10.76%#
71) 2,4,6-Tribromophenol	7.608	330	4992	5.43	ppm		0.06
Spiked Amount	100.000	Range	30 - 130	Recovery	=		5.43%#
85) Terphenyl-d14	10.044	244	38441	5.82	ppm		0.06
Spiked Amount	50.000	Range	30 - 130	Recovery	=		11.64%#
Target Compounds							
33) Naphthalene	5.337	128	2315	0.50	ppm	Qvalue	96
38) 2-Methylnaphthalene	5.930	142	3817	1.10	ppm		94
39) 1-Methylnaphthalene	6.026	142	2024	0.61	ppm		98
75) Phenanthrene	8.302	178	10276	1.66	ppm		99
76) Anthracene	8.345	178	2620	0.41	ppm		99
79) Fluoranthene	9.595	202	12093	1.67	ppm		91
84) Pyrene	9.846	202	16688	2.20	ppm		87
89) Benzo[a]anthracene	11.251	228	6499	0.86	ppm		86
90) Chrysene	11.299	228	6554	0.89	ppm		89
94) Benzo[b]fluoranthene	12.474	252	5263m	0.62	ppm		
95) Benzo[k]fluoranthene	12.496	252	5041m	0.60	ppm		
96) Benzo[a]pyrene	12.816	252	5510	0.74	ppm		96
97) Indeno[1,2,3-cd]pyrene	14.093	276	4318m	0.45	ppm		
99) Benzo[g,h,i]perylene	14.430	276	7425	0.93	ppm		92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

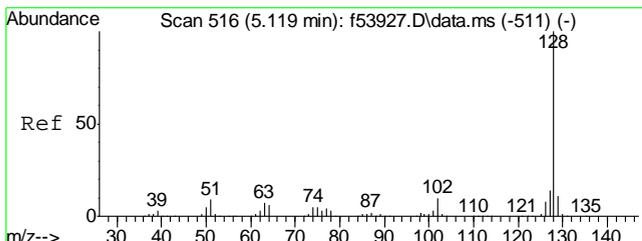
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12770.D
 Acq On : 4 Jun 2013 3:33 am
 Operator : kristinr
 Sample : jb37539-3
 Misc : OP33426,MSW587,20.59,,,1,5
 ALS Vial : 39 Sample Multiplier: 1

Quant Time: Jun 12 15:06:08 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

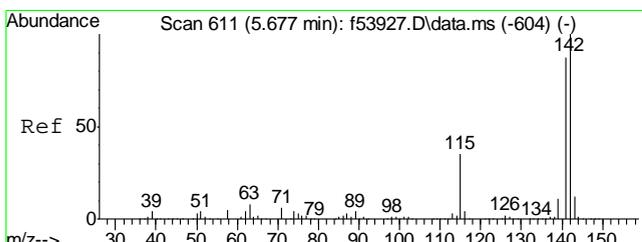
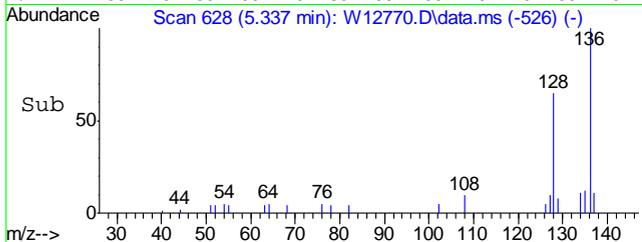
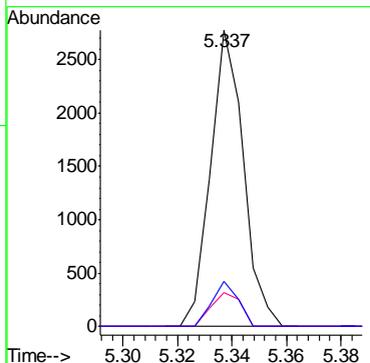
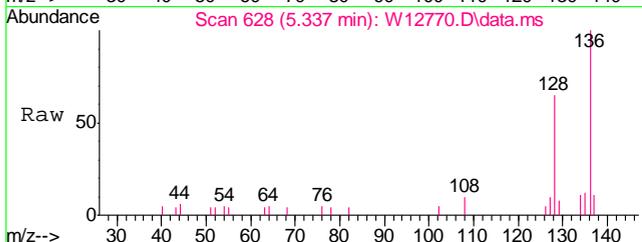


10.1.3
10



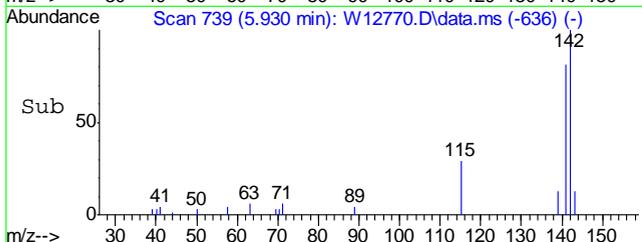
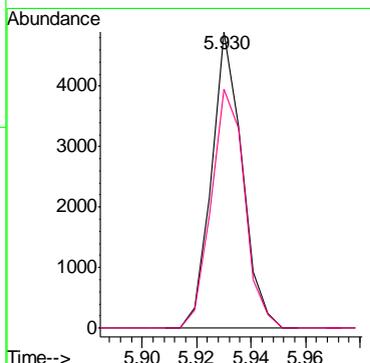
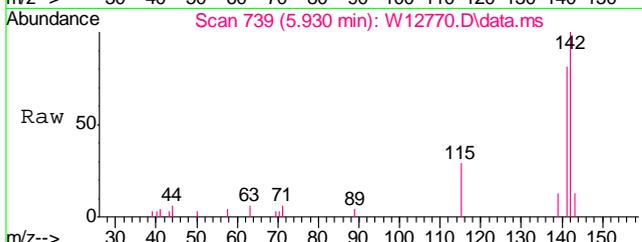
#33
 Naphthalene
 Concen: 0.50 ppm
 RT: 5.337 min Scan# 628
 Delta R.T. 0.044 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Ratio	Lower	Upper
128	100		
129	11.6	0.0	40.6
127	15.1	0.0	43.1

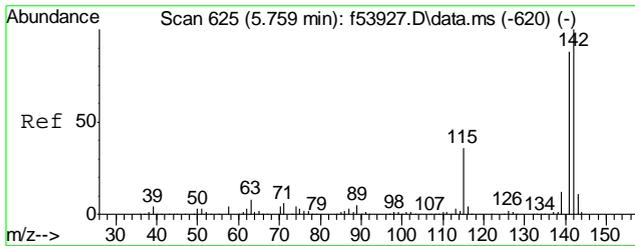


#38
 2-Methylnaphthalene
 Concen: 1.10 ppm
 RT: 5.930 min Scan# 739
 Delta R.T. 0.050 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	80.7	56.0	116.0

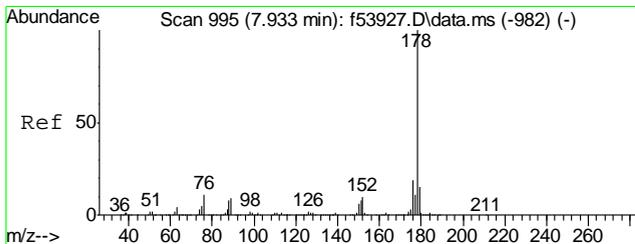
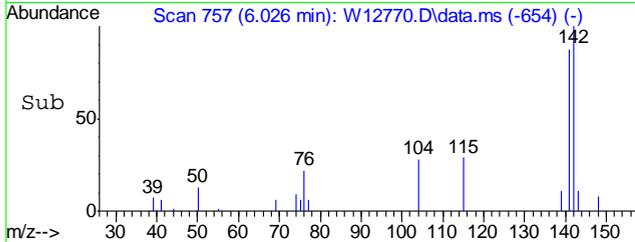
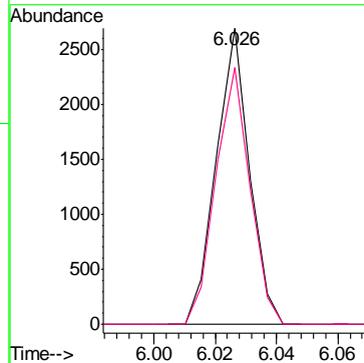
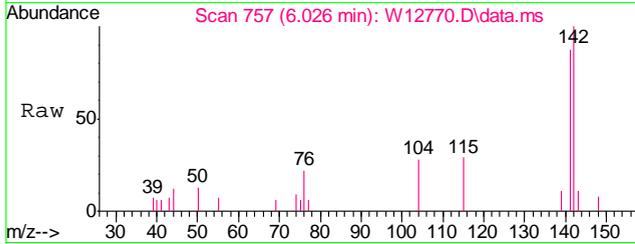


10.1.3
10



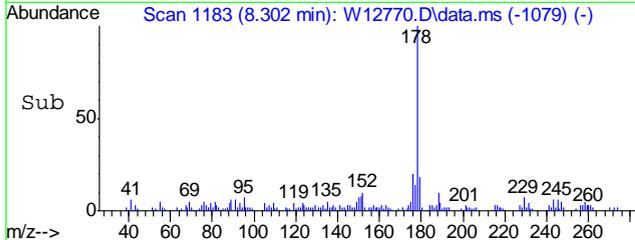
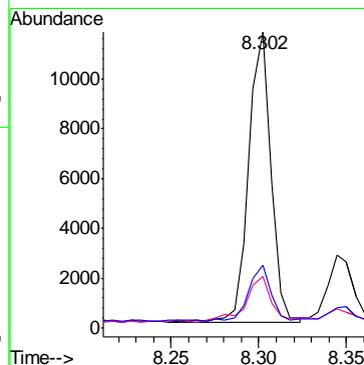
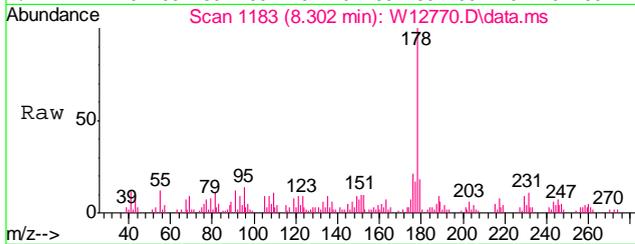
#39
 1-Methylnaphthalene
 Concen: 0.61 ppm
 RT: 6.026 min Scan# 757
 Delta R.T. 0.050 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	86.8	68.8	108.8

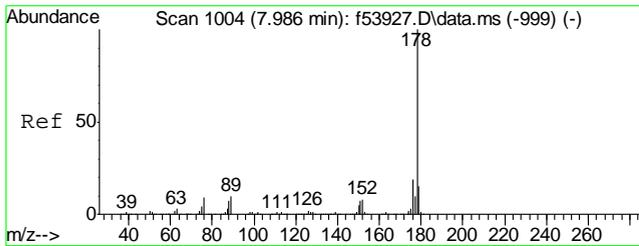


#75
 Phenanthrene
 Concen: 1.66 ppm
 RT: 8.302 min Scan# 1183
 Delta R.T. 0.055 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Ratio	Lower	Upper
178	100		
179	15.7	0.0	45.1
176	18.9	0.0	49.3

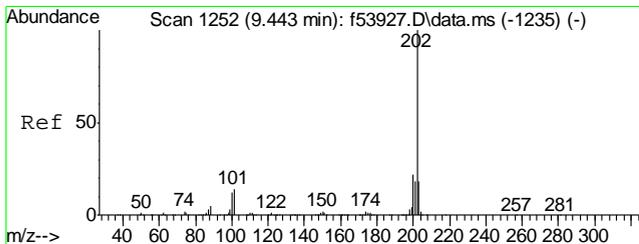
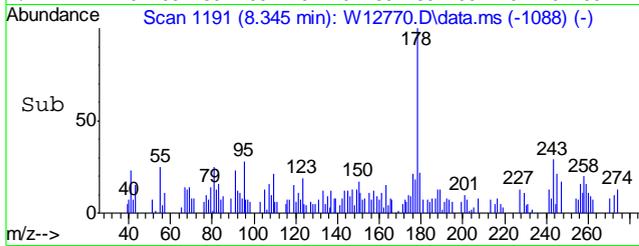
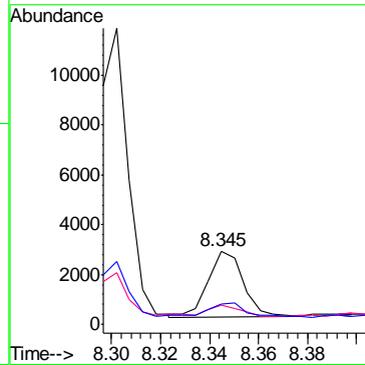
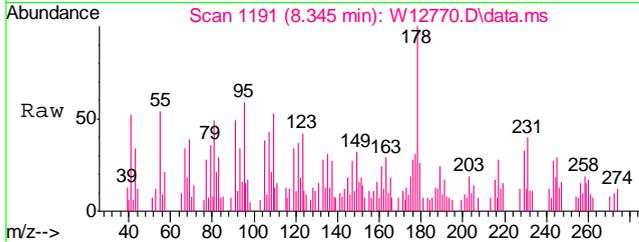


10.1.3
10



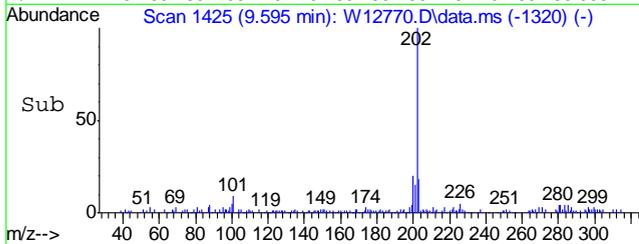
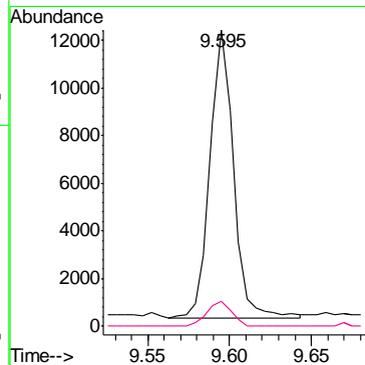
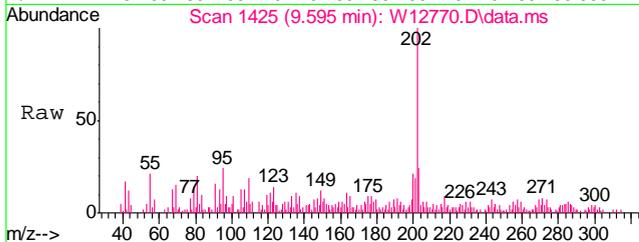
#76
 Anthracene
 Concen: 0.41 ppm
 RT: 8.345 min Scan# 1191
 Delta R.T. 0.050 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
178	2620	100	
179	14.9	0.0	45.3
176	18.7	0.0	48.5

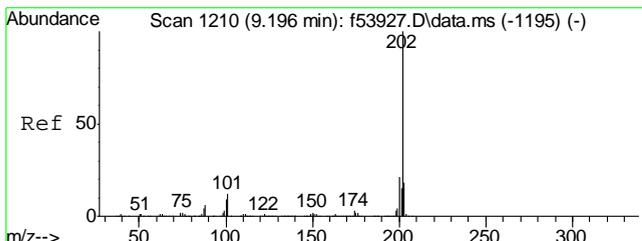


#79
 Fluoranthene
 Concen: 1.67 ppm
 RT: 9.595 min Scan# 1425
 Delta R.T. 0.061 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
202	12093	100	
101	8.8	0.0	42.1

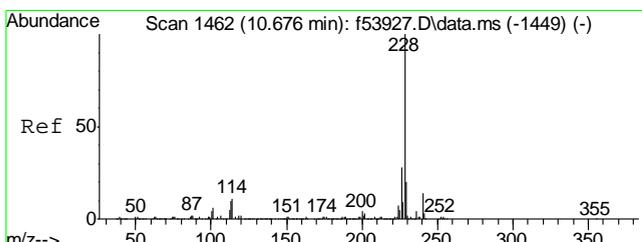
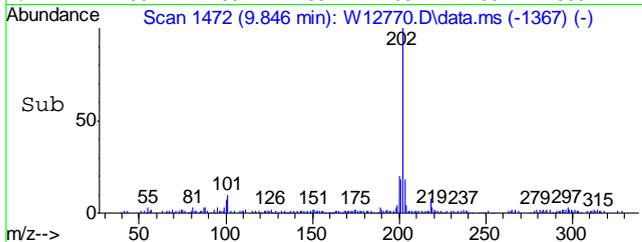
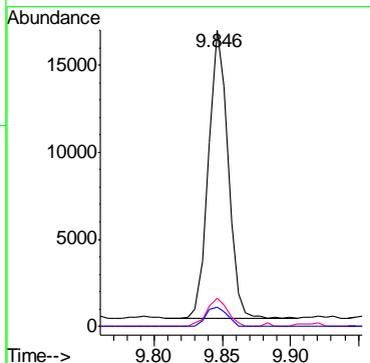
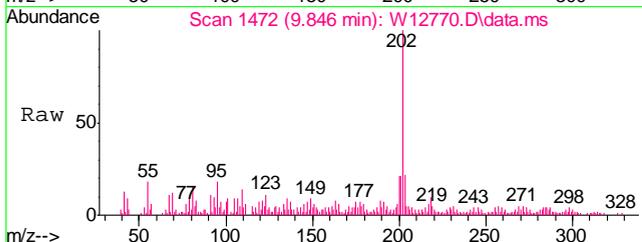


10.1.3
10



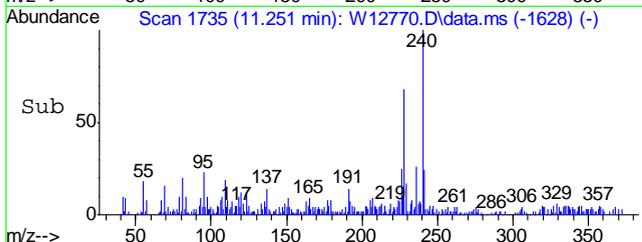
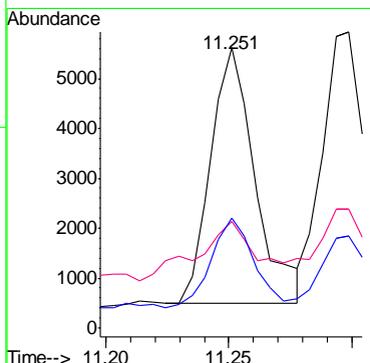
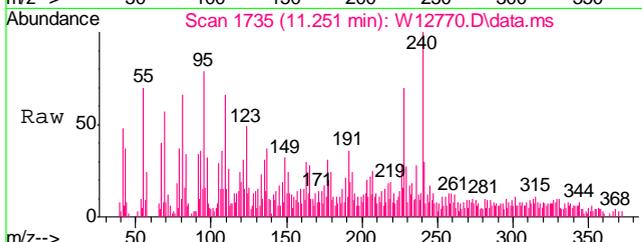
#84
 Pyrene
 Concen: 2.20 ppm
 RT: 9.846 min Scan# 1472
 Delta R.T. 0.061 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
202	16688		
101	9.6	0.0	44.8
100	6.8	0.0	41.9

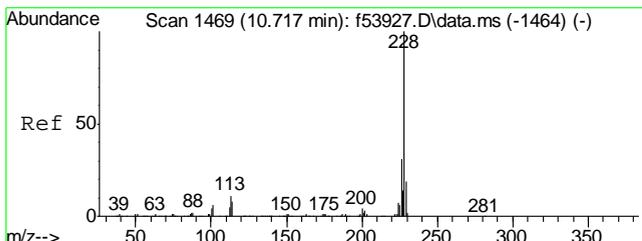


#89
 Benzo[a]anthracene
 Concen: 0.86 ppm
 RT: 11.251 min Scan# 1735
 Delta R.T. 0.071 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
228	6499		
229	15.1	0.0	49.6
226	35.1	0.0	56.8

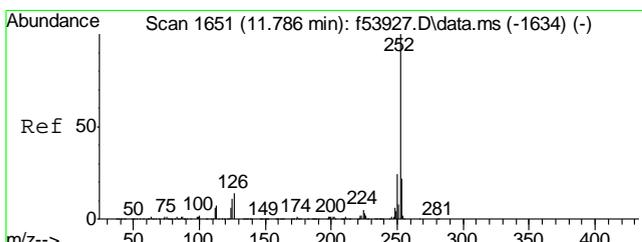
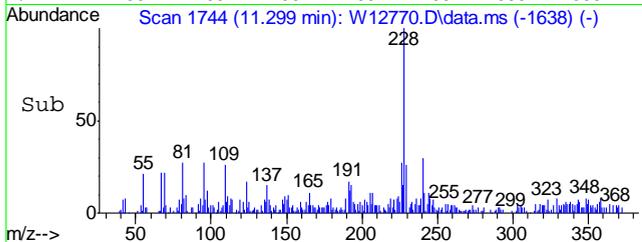
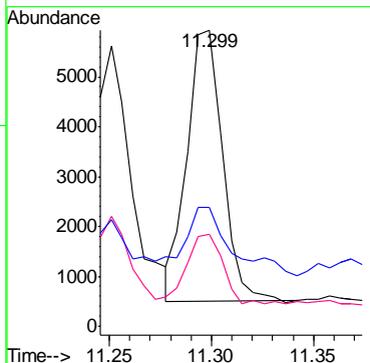
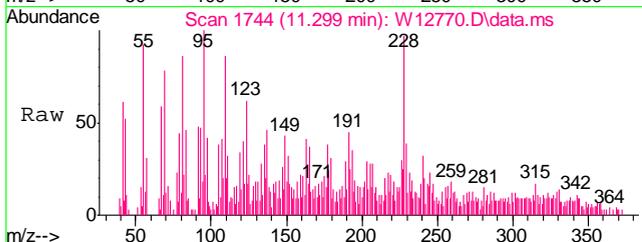


10.1.3
10



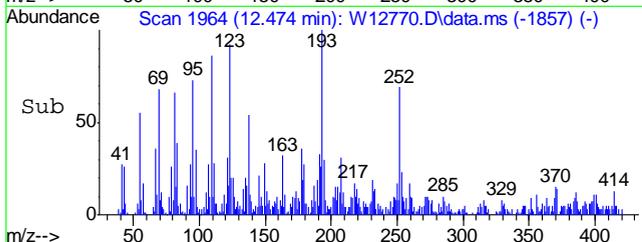
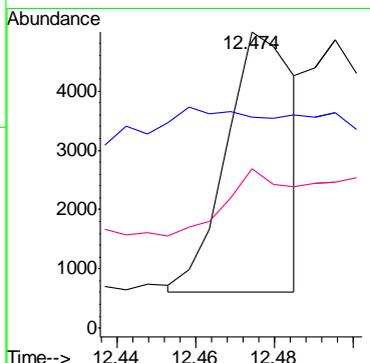
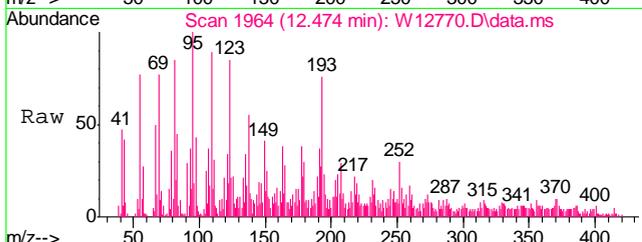
#90
 Chrysene
 Concen: 0.89 ppm
 RT: 11.299 min Scan# 1744
 Delta R.T. 0.066 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
228	6554	100	
226	24.7	0.0	59.8
229	25.3	0.0	49.7

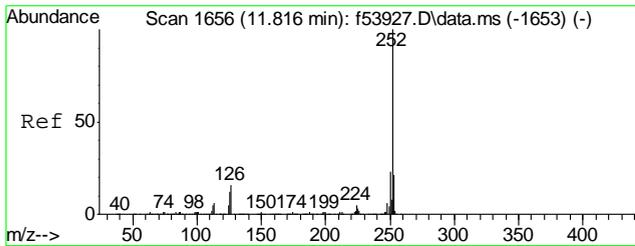


#94
 Benzo[b]fluoranthene
 Concen: 0.62 ppm m
 RT: 12.474 min Scan# 1964
 Delta R.T. 0.071 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
252	5263	100	
253	53.7	0.0	51.7#
125	71.1	0.0	41.8#

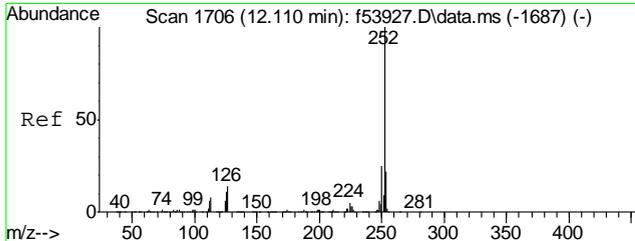
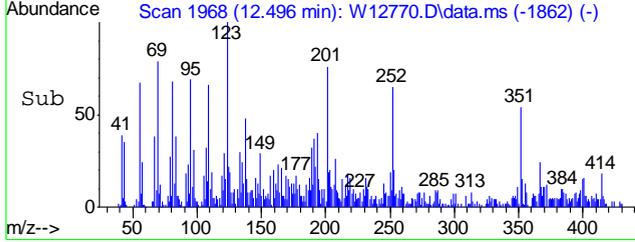
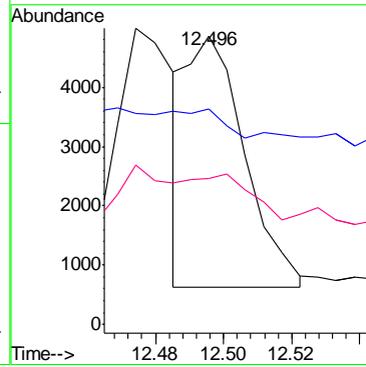
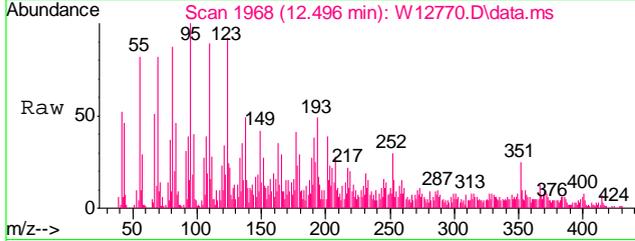


10.1.3
 10



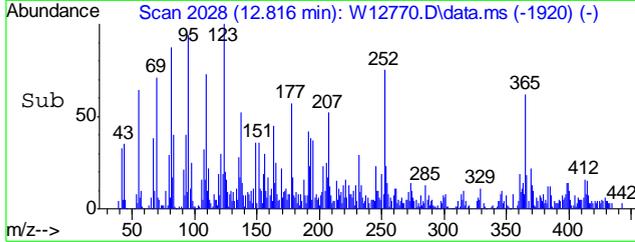
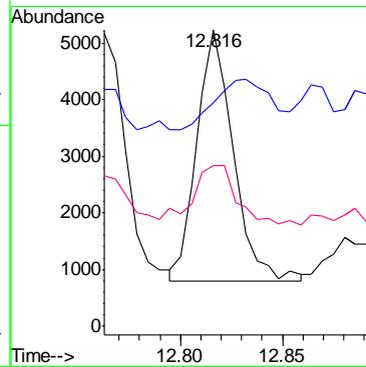
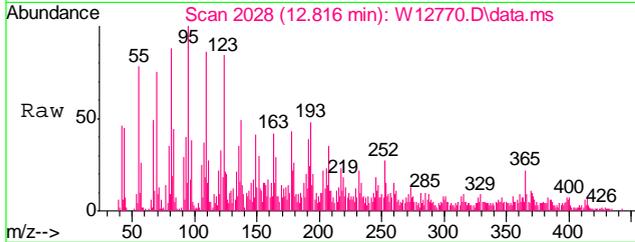
#95
 Benzo[k]fluoranthene
 Concen: 0.60 ppm m
 RT: 12.496 min Scan# 1968
 Delta R.T. 0.066 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
252	5041	100	
253	50.5	0.0	51.6
125	74.9	0.0	40.3#

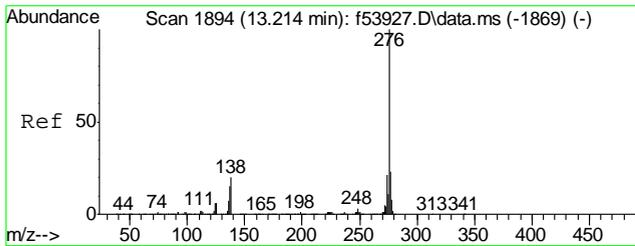


#96
 Benzo[a]pyrene
 Concen: 0.74 ppm
 RT: 12.816 min Scan# 2028
 Delta R.T. 0.076 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
252	5510	100	
253	24.3	0.0	51.5
125	11.4	0.0	41.6

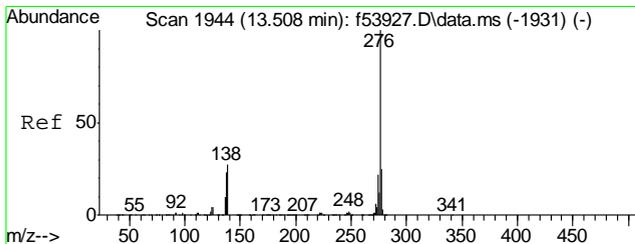
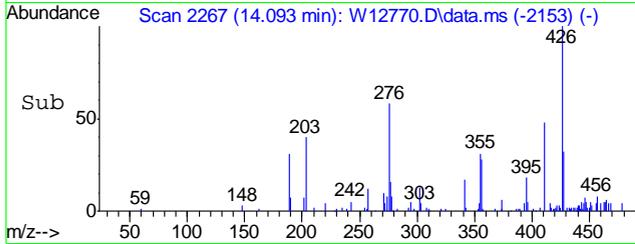
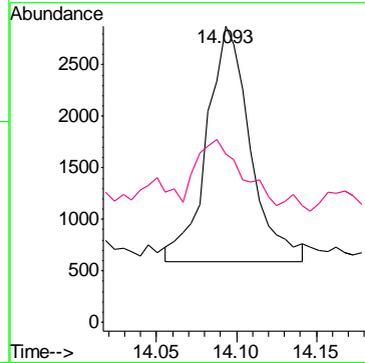
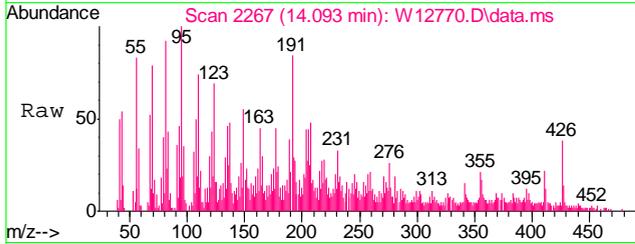


10.1.3
10



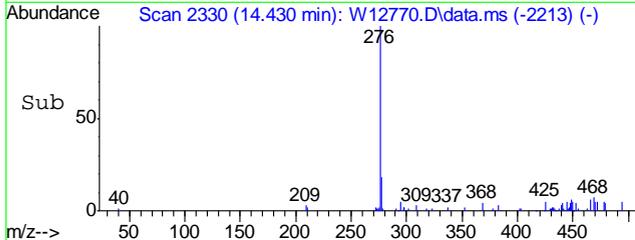
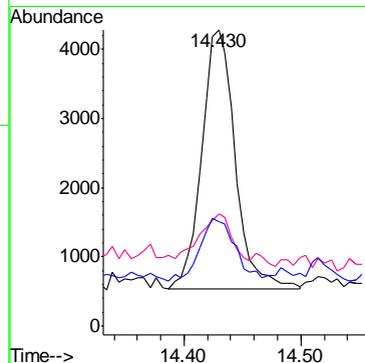
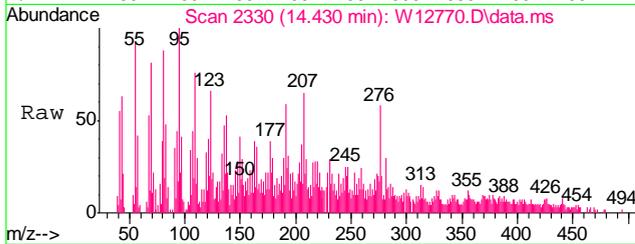
#97
 Indeno[1,2,3-cd]pyrene
 Concen: 0.45 ppm m
 RT: 14.093 min Scan# 2267
 Delta R.T. 0.109 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
276	4318	100	
138	56.8	2.0	62.0



#99
 Benzo[g,h,i]perylene
 Concen: 0.93 ppm
 RT: 14.430 min Scan# 2330
 Delta R.T. 0.125 min
 Lab File: W12770.D
 Acq: 4 Jun 2013 3:33 am

Tgt Ion	Resp	Lower	Upper
276	7425	100	
138	16.8	0.0	54.4
277	23.3	0.0	53.5



10.1.3
10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
Data File : W12771.D
Acq On : 4 Jun 2013 3:57 am
Operator : kristinr
Sample : jB37539-4
Misc : OP33426,MSW587,20.38,,,1,1
ALS Vial : 40 Sample Multiplier: 1

Quant Time: Jun 12 15:06:54 2013
Quant Method : C:\msdchem\1\methods\W130530_8270+.m
Quant Title : SW-864 Method 8270
QLast Update : Thu Jun 06 09:42:09 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.263	152	55648	40.00	ppm	0.05
21) 1,4-Dichlorobenzene-d4A	4.263	152	55648	40.00	PPM	# 0.00
23) Naphthalene-d8	5.321	136	197953	40.00	ppm	0.05
41) Naphthalene-d8a	5.321	136	197953	40.00	ppm	# 0.00
43) Acenaphthene-d10	6.865	164	132925	40.00	ppm	0.05
65) Acenaphthene-d10a	6.865	164	132925	40.00	ppm	# 0.00
67) Phenanthrene-d10	8.281	188	243792	40.00	ppm	0.05
80) Phenanthrene-d10a	8.281	188	243826m	40.00	ppm	0.02
82) Chrysene-d12	11.267	240	297791	40.00	ppm	0.06
92) Perylene-d12	12.864	264	297425	40.00	ppm	0.07
System Monitoring Compounds						
5) 2-Fluorophenol	3.328	112	46977	31.18	ppm	0.07
Spiked Amount	100.000	Range	30 - 130	Recovery	=	31.18%
7) Phenol-d5	4.001	99	53534	29.15	ppm	0.06
Spiked Amount	100.000	Range	30 - 130	Recovery	=	29.15%#
24) Nitrobenzene-d5	4.733	82	43946	30.07	ppm	0.05
Spiked Amount	50.000	Range	30 - 130	Recovery	=	60.14%
48) 2-Fluorobiphenyl	6.267	172	147027	32.22	ppm	0.05
Spiked Amount	50.000	Range	30 - 130	Recovery	=	64.44%
71) 2,4,6-Tribromophenol	7.607	330	34772	35.37	ppm	0.06
Spiked Amount	100.000	Range	30 - 130	Recovery	=	35.37%
85) Terphenyl-d14	10.044	244	237805	34.65	ppm	0.06
Spiked Amount	50.000	Range	30 - 130	Recovery	=	69.30%

Target Compounds Qvalue

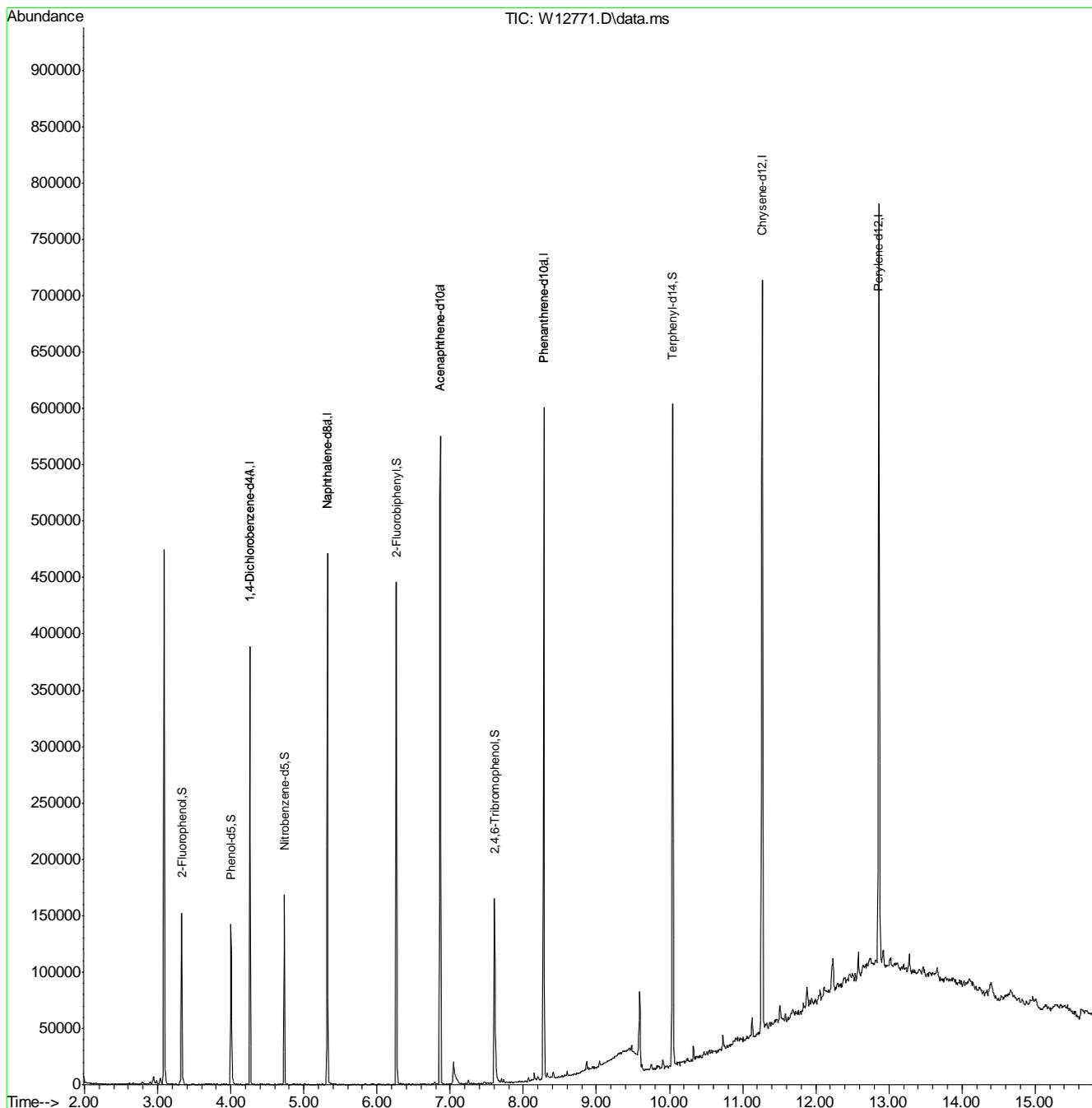
(#) = qualifier out of range (m) = manual integration (+) = signals summed

10.1.4
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Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12771.D
 Acq On : 4 Jun 2013 3:57 am
 Operator : kristinr
 Sample : jB37539-4
 Misc : OP33426,MSW587,20.38,,,1,1
 ALS Vial : 40 Sample Multiplier: 1

Quant Time: Jun 12 15:06:54 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration



10.1.4
10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12760.D
 Acq On : 3 Jun 2013 11:30 pm
 Operator : kristinr
 Sample : jB37539-5
 Misc : OP33426,MSW587,20.77,,,1,1
 ALS Vial : 29 Sample Multiplier: 1

Quant Time: Jun 07 14:54:01 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
Internal Standards							
1) 1,4-Dichlorobenzene-d4	4.263	152	53870	40.00	ppm	0.05	
21) 1,4-Dichlorobenzene-d4A	4.263	152	53870	40.00	PPM	# 0.00	
23) Naphthalene-d8	5.321	136	195727	40.00	ppm	0.05	
41) Naphthalene-d8a	5.321	136	195727	40.00	ppm	# 0.00	
43) Acenaphthene-d10	6.860	164	130203	40.00	ppm	0.04	
65) Acenaphthene-d10a	6.860	164	130203	40.00	ppm	# 0.00	
67) Phenanthrene-d10	8.275	188	238728	40.00	ppm	0.05	
80) Phenanthrene-d10a	8.275	188	238728m	40.00	ppm	0.01	
82) Chrysene-d12	11.267	240	294285	40.00	ppm	0.06	
92) Perylene-d12	12.864	264	297317	40.00	ppm	0.07	
System Monitoring Compounds							
5) 2-Fluorophenol	3.323	112	45297	31.05	ppm	0.07	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	31.05%	
7) Phenol-d5	4.001	99	52781	29.69	ppm	0.06	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	29.69%#	
24) Nitrobenzene-d5	4.728	82	40338	27.91	ppm	0.04	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	55.82%	
48) 2-Fluorobiphenyl	6.261	172	145932	32.65	ppm	0.04	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	65.30%	
71) 2,4,6-Tribromophenol	7.602	330	34610	35.95	ppm	0.05	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	35.95%	
85) Terphenyl-d14	10.038	244	236599	34.88	ppm	0.06	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	69.76%	
Target Compounds							
33) Naphthalene	5.337	128	7303	1.45	ppm	99	Qvalue
38) 2-Methylnaphthalene	5.930	142	9813	2.61	ppm	99	
39) 1-Methylnaphthalene	6.026	142	3304	0.92	ppm	96	
66) 1,1'-Biphenyl	6.341	154	1805m	0.40	ppm		
75) Phenanthrene	8.297	178	6565	1.02	ppm	96	
84) Pyrene	9.846	202	5252	0.67	ppm	91	
90) Chrysene	11.288	228	2054	0.27	ppm	93	
99) Benzo[g,h,i]perylene	14.392	276	2282m	0.27	ppm		

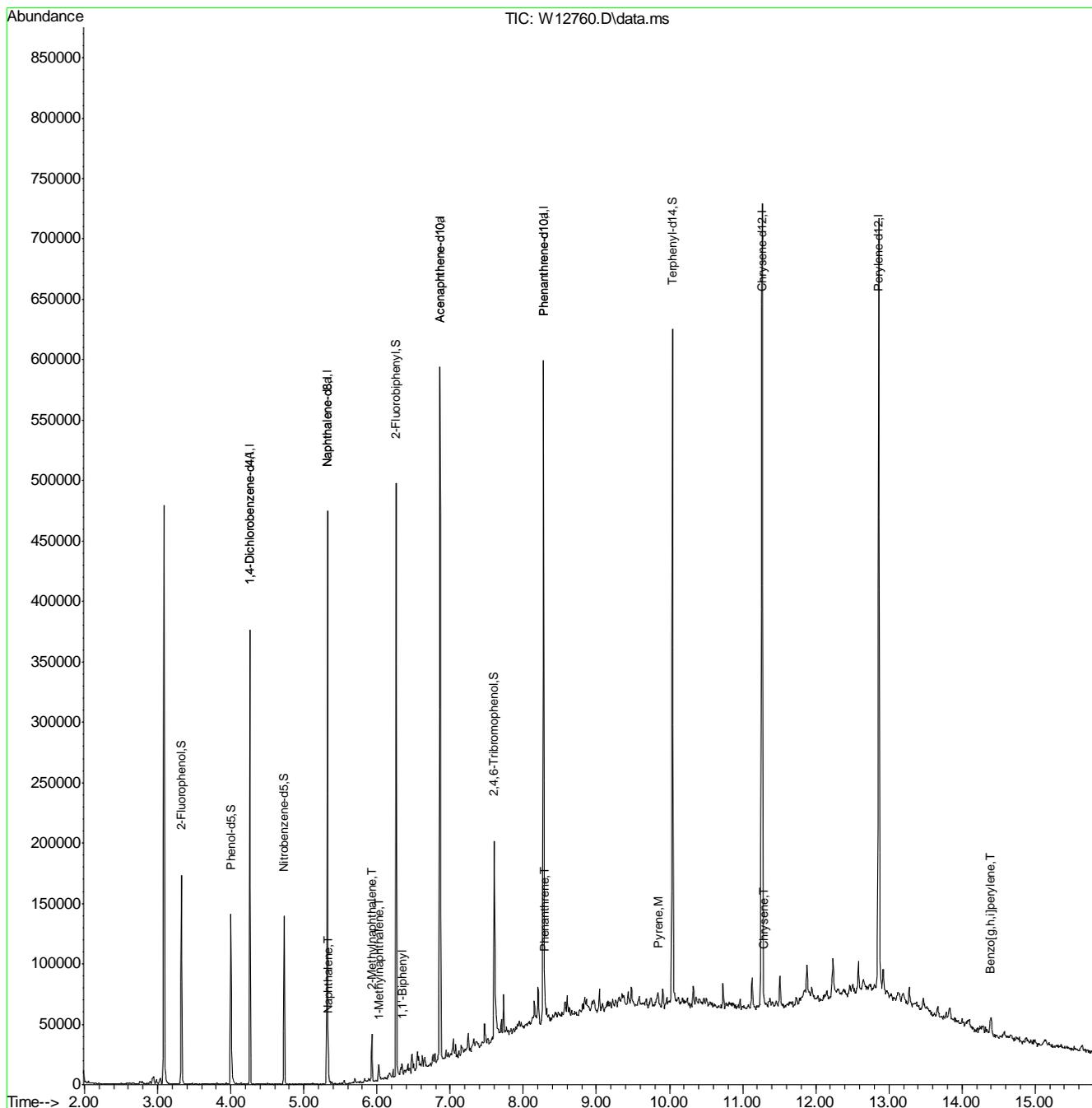
(#) = qualifier out of range (m) = manual integration (+) = signals summed

10.1.5
10

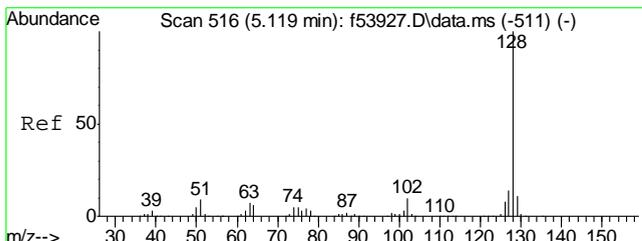
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12760.D
 Acq On : 3 Jun 2013 11:30 pm
 Operator : kristinr
 Sample : jb37539-5
 Misc : OP33426,MSW587,20.77,,,1,1
 ALS Vial : 29 Sample Multiplier: 1

Quant Time: Jun 07 14:54:01 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

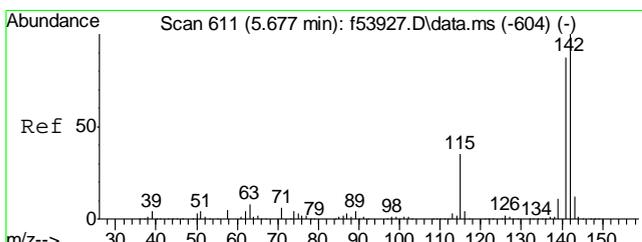
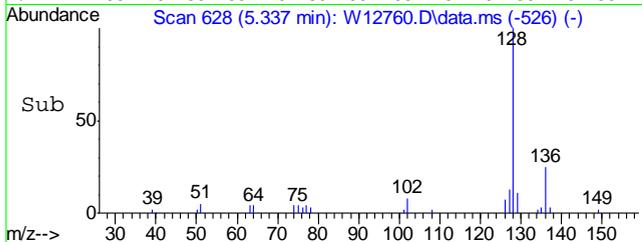
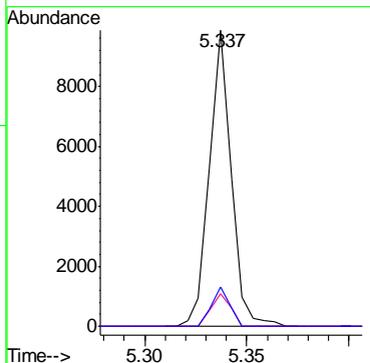
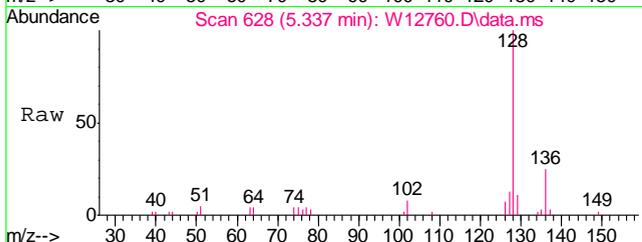


10.1.5 10



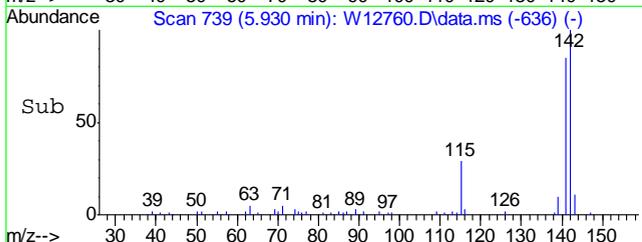
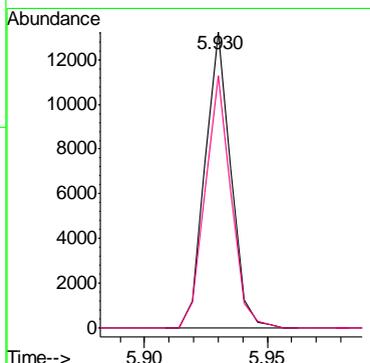
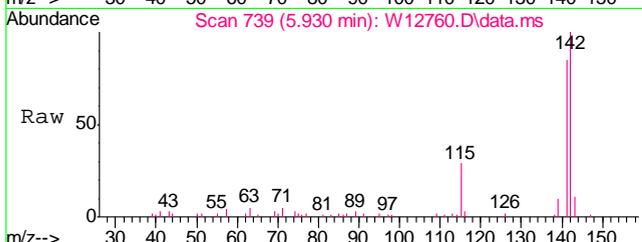
#33
 Naphthalene
 Concen: 1.45 ppm
 RT: 5.337 min Scan# 628
 Delta R.T. 0.044 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion	Resp	Lower	Upper
128	7303	100	
129	11.1	0.0	40.6
127	13.5	0.0	43.1

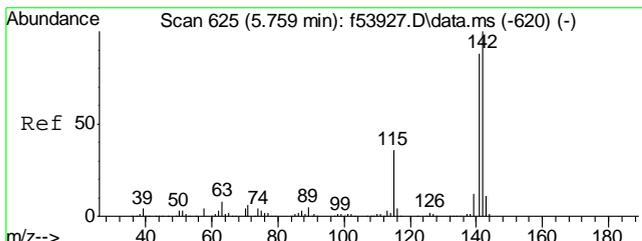


#38
 2-Methylnaphthalene
 Concen: 2.61 ppm
 RT: 5.930 min Scan# 739
 Delta R.T. 0.050 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion	Resp	Lower	Upper
142	9813	100	
141	85.4	56.0	116.0

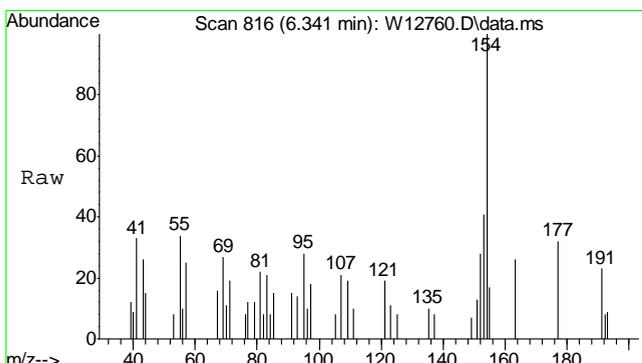
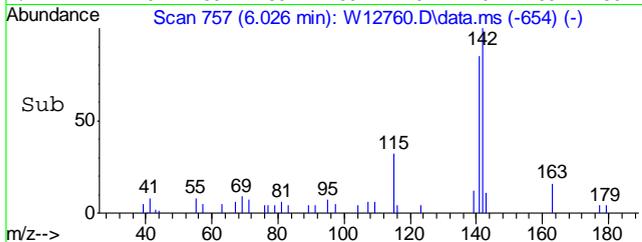
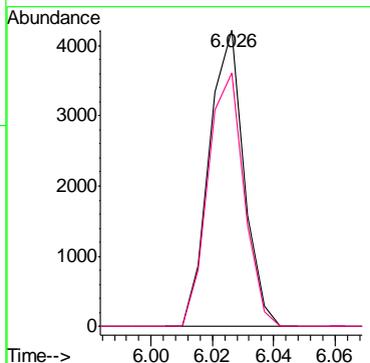
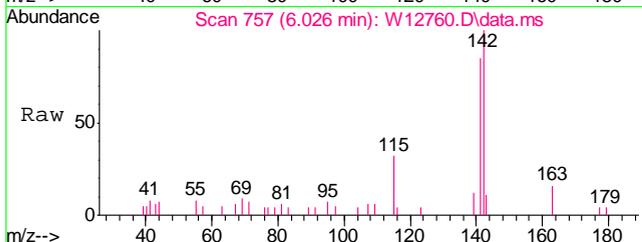


10.1.5
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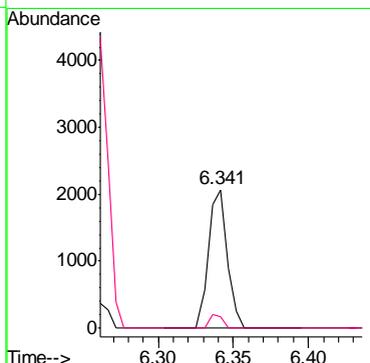
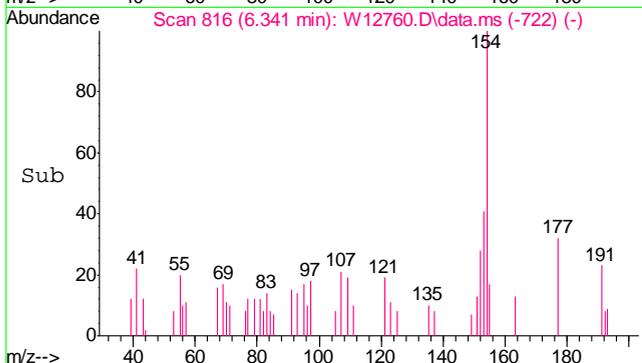
#39
 1-Methylnaphthalene
 Concen: 0.92 ppm
 RT: 6.026 min Scan# 757
 Delta R.T. 0.050 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion:142 Resp: 3304
 Ion Ratio Lower Upper
 142 100
 141 85.5 68.8 108.8

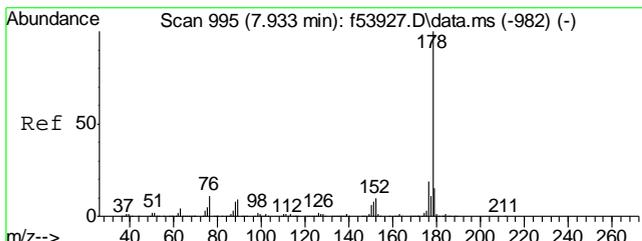


#66
 1,1'-Biphenyl
 Concen: 0.40 ppm m
 RT: 6.341 min Scan# 816
 Delta R.T. 0.002 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion:154 Resp: 1805
 Ion Ratio Lower Upper
 154 100
 76 7.8 0.0 0.0#

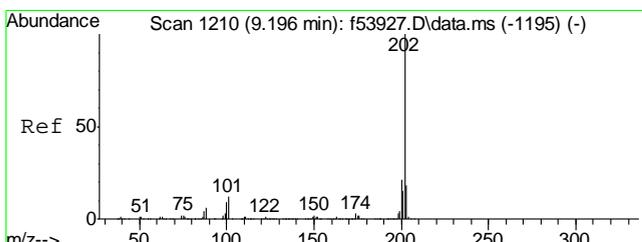
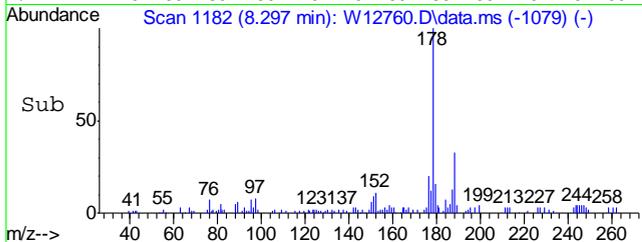
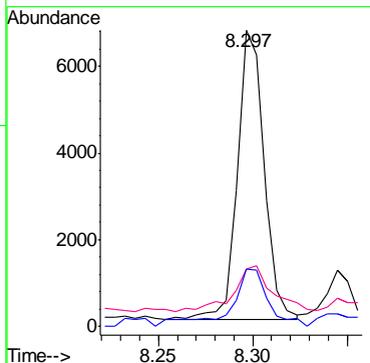
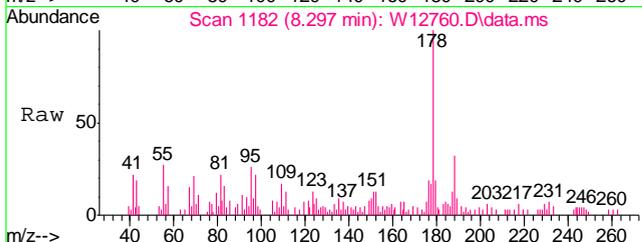


10.1.5 10



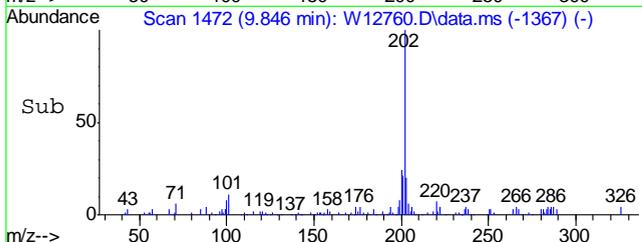
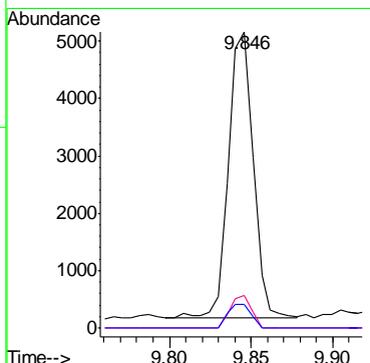
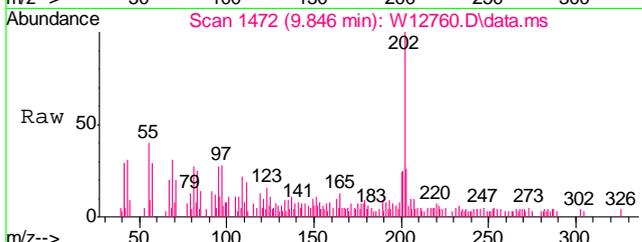
#75
 Phenanthrene
 Concen: 1.02 ppm
 RT: 8.297 min Scan# 1182
 Delta R.T. 0.050 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion	Resp	Lower	Upper
178	6565	100	
179	13.8	0.0	45.1
176	17.2	0.0	49.3

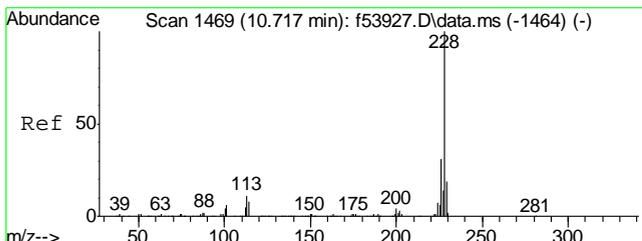


#84
 Pyrene
 Concen: 0.67 ppm
 RT: 9.846 min Scan# 1472
 Delta R.T. 0.061 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion	Resp	Lower	Upper
202	5252	100	
101	11.5	0.0	44.8
100	8.4	0.0	41.9

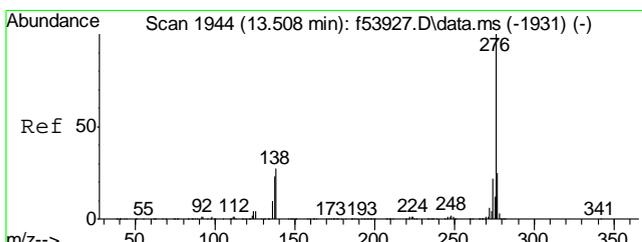
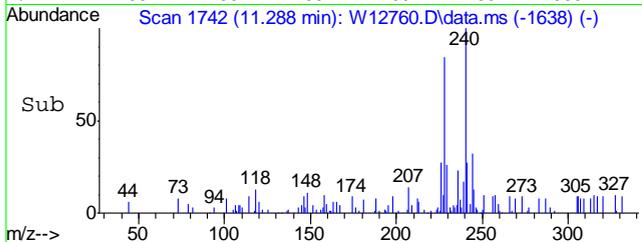
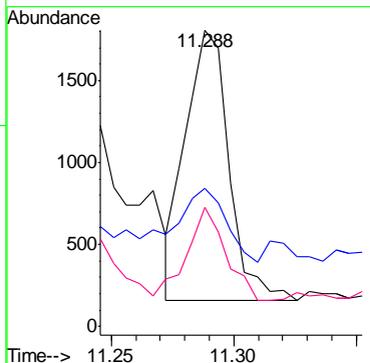
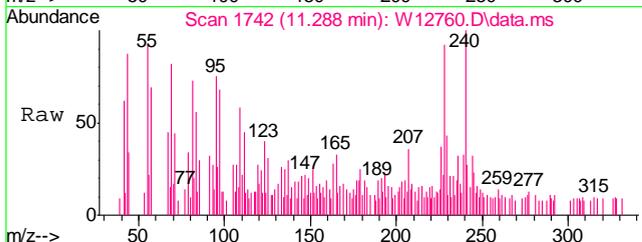


10.1.5 10



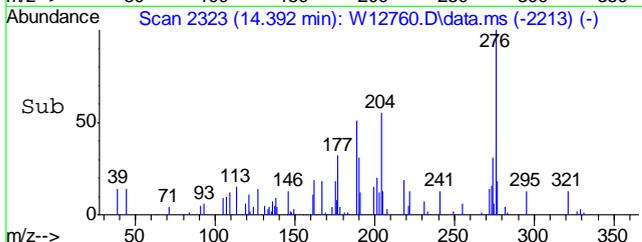
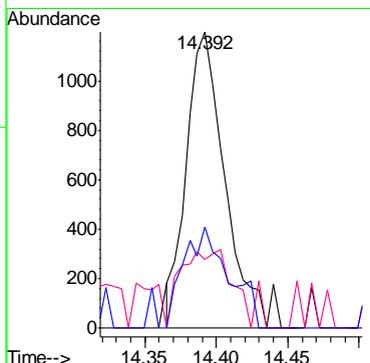
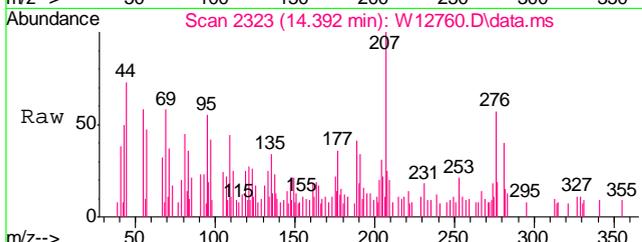
#90
 Chrysene
 Concen: 0.27 ppm
 RT: 11.288 min Scan# 1742
 Delta R.T. 0.055 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion	Resp	Lower	Upper
228	100		
226	31.5	0.0	59.8
229	25.3	0.0	49.7



#99
 Benzo[g,h,i]perylene
 Concen: 0.27 ppm m
 RT: 14.392 min Scan# 2323
 Delta R.T. 0.087 min
 Lab File: W12760.D
 Acq: 3 Jun 2013 11:30 pm

Tgt Ion	Resp	Lower	Upper
276	100		
138	23.3	0.0	54.4
277	34.3	0.0	53.5



10.1.5
10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12761.D
 Acq On : 3 Jun 2013 11:54 pm
 Operator : kristinr
 Sample : jB37539-6
 Misc : OP33426,MSW587,20.58,,,1,1
 ALS Vial : 30 Sample Multiplier: 1

Quant Time: Jun 12 14:58:22 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

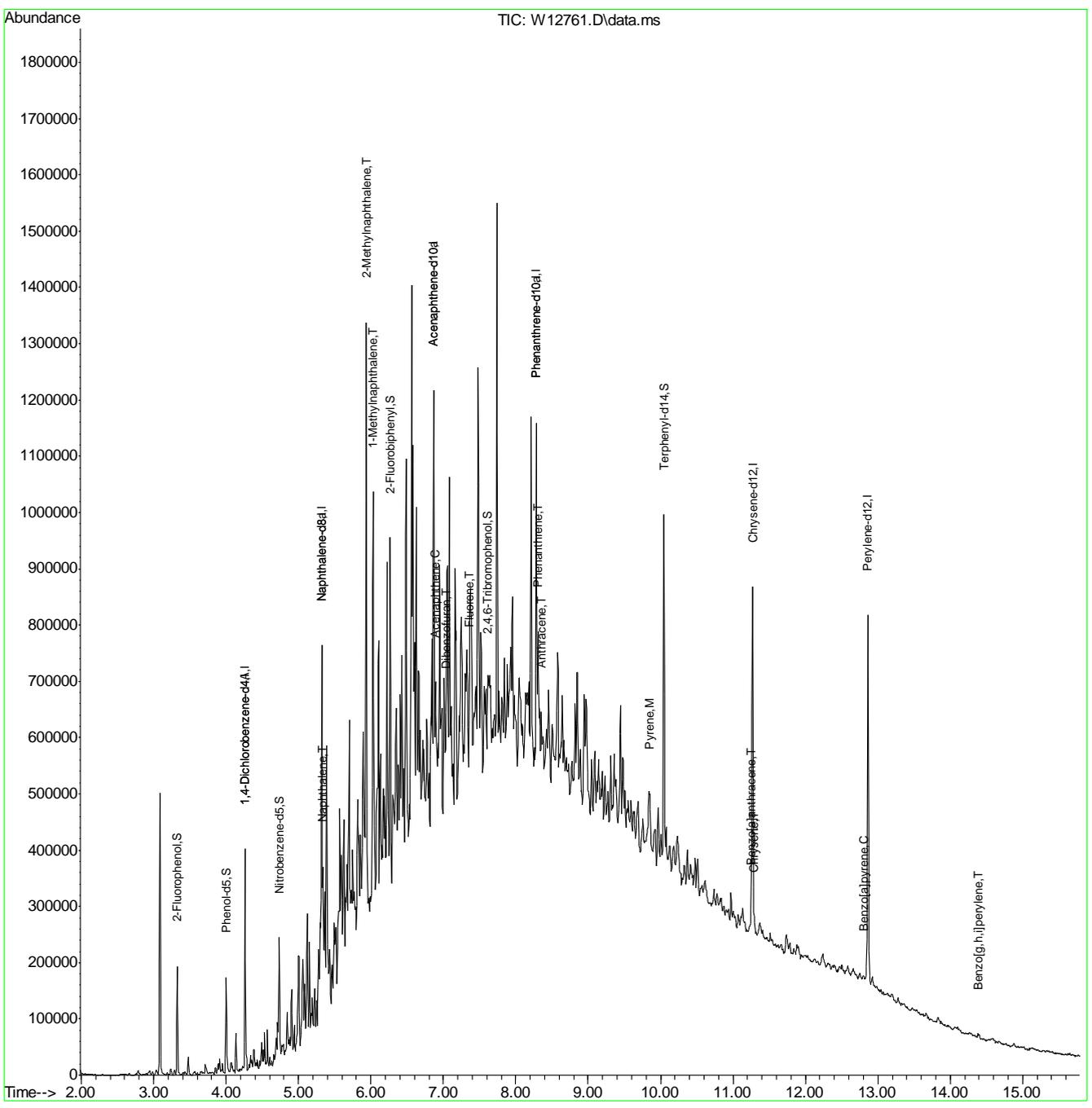
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
Internal Standards							
1) 1,4-Dichlorobenzene-d4	4.263	152	55211	40.00	ppm	0.05	
21) 1,4-Dichlorobenzene-d4A	4.263	152	55211	40.00	PPM	# 0.00	
23) Naphthalene-d8	5.321	136	194828m	40.00	ppm	0.05	
41) Naphthalene-d8a	5.321	136	193946	40.00	ppm	# 0.00	
43) Acenaphthene-d10	6.865	164	131700	40.00	ppm	0.05	
65) Acenaphthene-d10a	6.865	164	131668m	40.00	ppm	0.00	
67) Phenanthrene-d10	8.286	188	231995	40.00	ppm	0.06	
80) Phenanthrene-d10a	8.286	188	232577m	40.00	ppm	0.02	
82) Chrysene-d12	11.272	240	289199	40.00	ppm	0.07	
92) Perylene-d12	12.864	264	298118	40.00	ppm	0.07	
System Monitoring Compounds							
5) 2-Fluorophenol	3.323	112	50244	33.61	ppm	0.07	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	33.61%	
7) Phenol-d5	4.001	99	58167	31.93	ppm	0.06	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	31.93%	
24) Nitrobenzene-d5	4.733	82	47086	32.73	ppm	0.05	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	65.46%	
48) 2-Fluorobiphenyl	6.266	172	163132	36.09	ppm	0.05	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	72.18%	
71) 2,4,6-Tribromophenol	7.613	330	36847	39.38	ppm	0.06	
Spiked Amount	100.000	Range	30 - 130	Recovery	=	39.38%	
85) Terphenyl-d14	10.049	244	256254	38.44	ppm	0.07	
Spiked Amount	50.000	Range	30 - 130	Recovery	=	76.88%	
Target Compounds							
33) Naphthalene	5.337	128	74182m	14.75	ppm		Qvalue
38) 2-Methylnaphthalene	5.935	142	233909	62.52	ppm		100
39) 1-Methylnaphthalene	6.031	142	158229m	44.09	ppm		
53) Acenaphthene	6.892	153	13049m	3.56	ppm		
55) Dibenzofuran	7.036	168	13552	2.39	ppm		100
59) Fluorene	7.362	166	25198m	5.64	ppm		
75) Phenanthrene	8.307	178	92496	14.73	ppm		98
76) Anthracene	8.355	178	19253m	2.93	ppm		
84) Pyrene	9.851	202	46361	6.04	ppm		89
89) Benzo[a]anthracene	11.251	228	7132	0.93	ppm		88
90) Chrysene	11.294	228	9532	1.28	ppm		78
96) Benzo[a]pyrene	12.805	252	2646	0.34	ppm		92
99) Benzo[g,h,i]perylene	14.392	276	2272	0.27	ppm		86

(#) = qualifier out of range (m) = manual integration (+) = signals summed

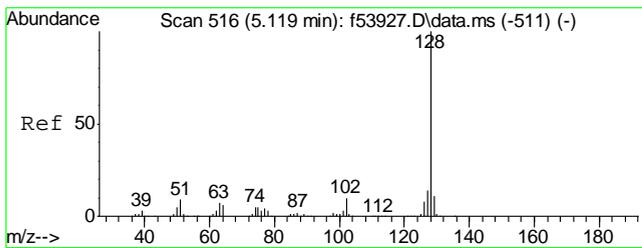
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
Data File : W12761.D
Acq On : 3 Jun 2013 11:54 pm
Operator : kristinr
Sample : jb37539-6
Misc : OP33426,MSW587,20.58,,,1,1
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Jun 12 14:58:22 2013
Quant Method : C:\msdchem\1\methods\W130530_8270+.m
Quant Title : SW-864 Method 8270
QLast Update : Thu Jun 06 09:42:09 2013
Response via : Initial Calibration

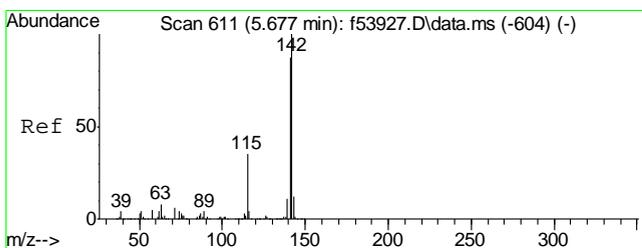
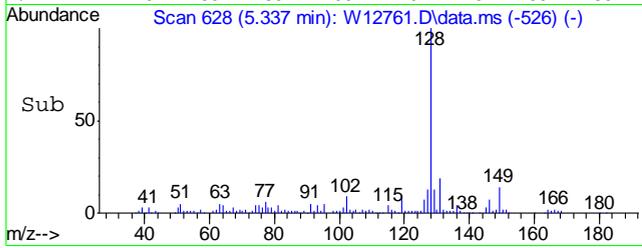
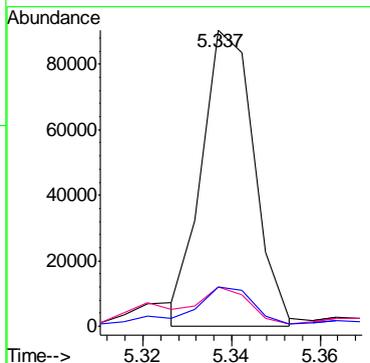
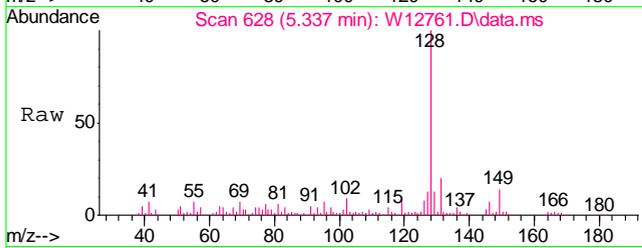


10.16 10



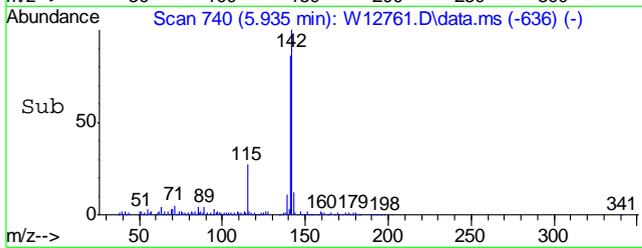
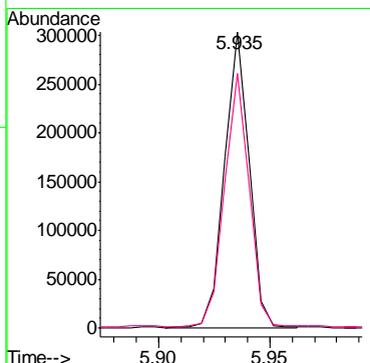
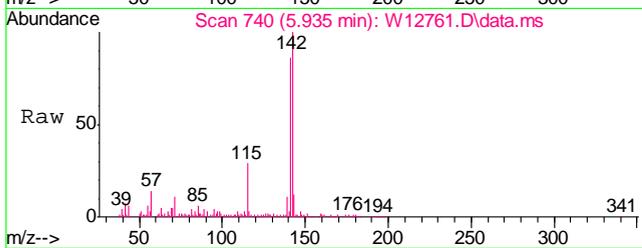
#33
 Naphthalene
 Concen: 14.75 ppm m
 RT: 5.337 min Scan# 628
 Delta R.T. 0.044 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
128	74182	100	
129	13.3	0.0	40.6
127	13.4	0.0	43.1

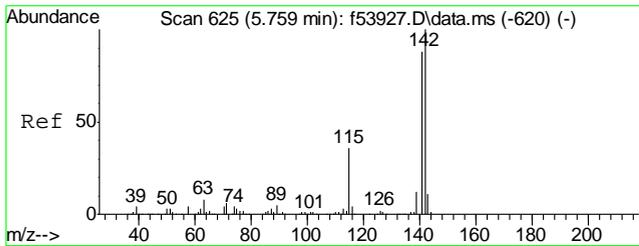


#38
 2-Methylnaphthalene
 Concen: 62.52 ppm
 RT: 5.935 min Scan# 740
 Delta R.T. 0.055 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
142	233909	100	
141	85.7	56.0	116.0

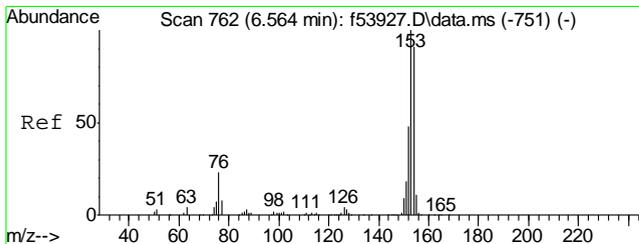
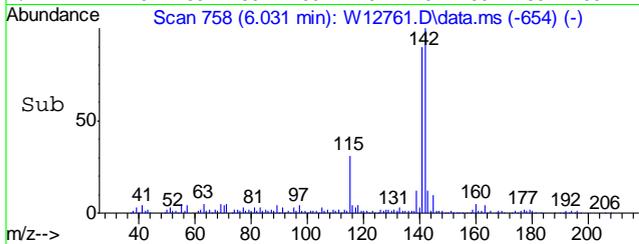
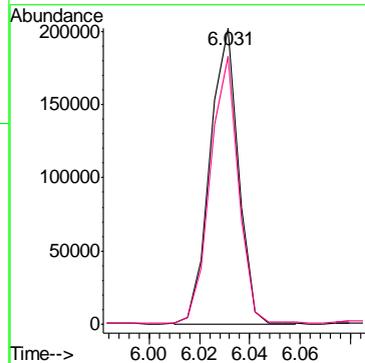
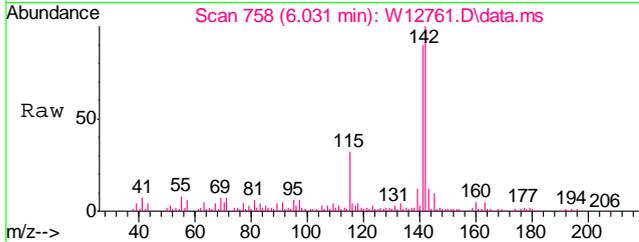


10.1.6
10



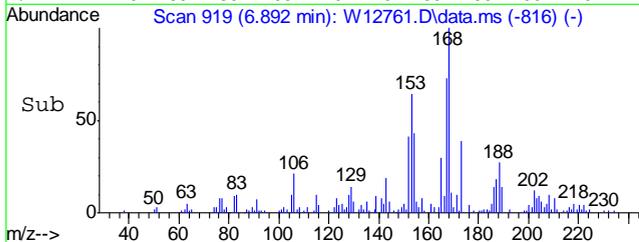
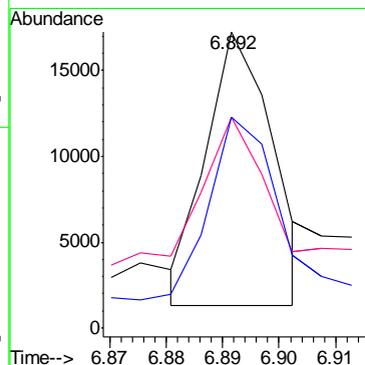
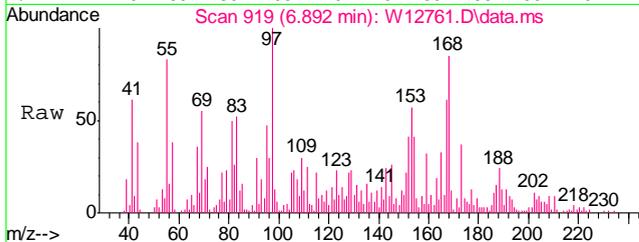
#39
 1-Methylnaphthalene
 Concen: 44.09 ppm m
 RT: 6.031 min Scan# 758
 Delta R.T. 0.055 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion:142 Resp: 158229
 Ion Ratio Lower Upper
 142 100
 141 90.5 68.8 108.8

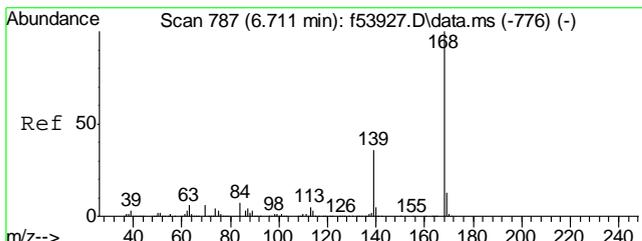


#53
 Acenaphthene
 Concen: 3.56 ppm m
 RT: 6.892 min Scan# 919
 Delta R.T. 0.050 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion:153 Resp: 13049
 Ion Ratio Lower Upper
 153 100
 152 71.1 17.6 77.6
 154 71.2 62.0 122.0

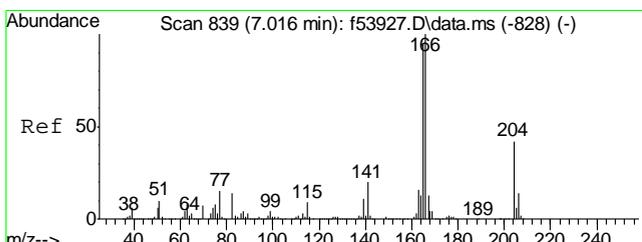
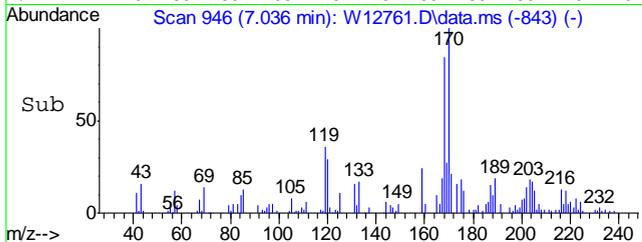
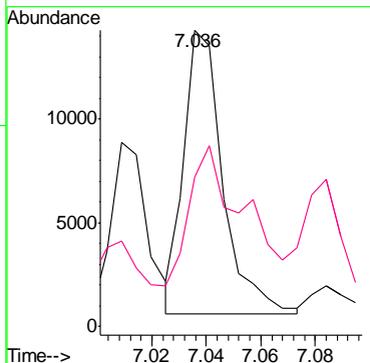
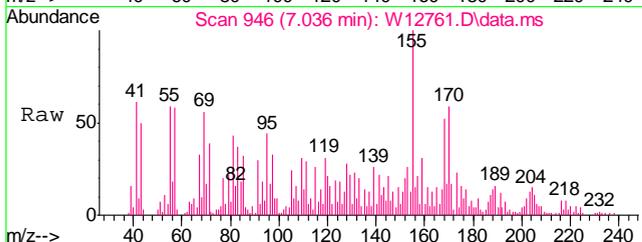


10.1.6
 10



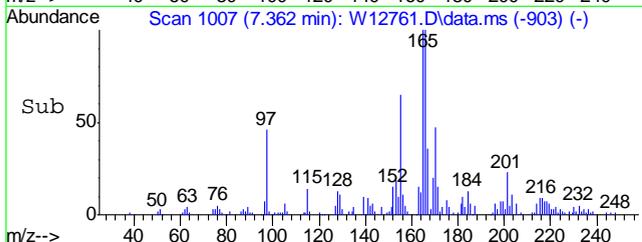
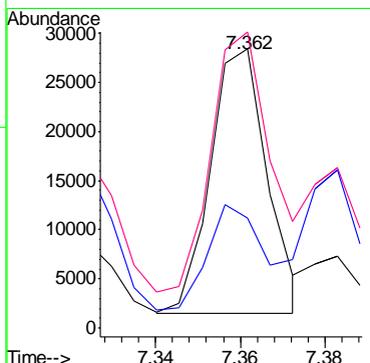
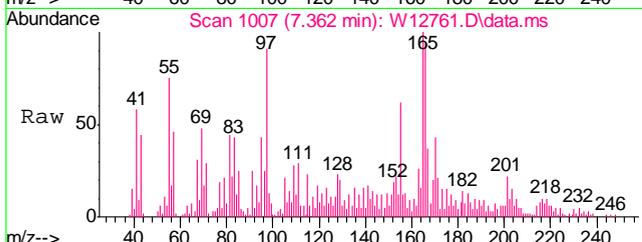
#55
 Dibenzofuran
 Concen: 2.39 ppm
 RT: 7.036 min Scan# 946
 Delta R.T. 0.050 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
168	13552	100	
139	39.0	9.2	69.2

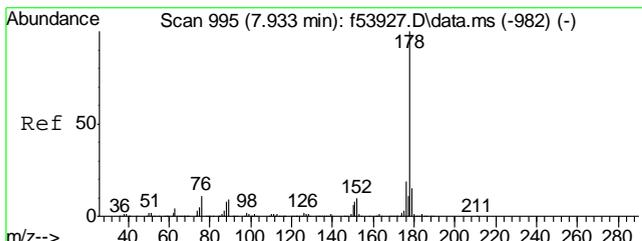


#59
 Fluorene
 Concen: 5.64 ppm m
 RT: 7.362 min Scan# 1007
 Delta R.T. 0.055 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
166	25198	100	
165	105.8	66.3	126.3
167	39.2	0.0	43.2

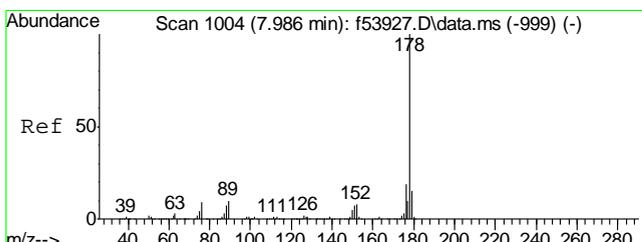
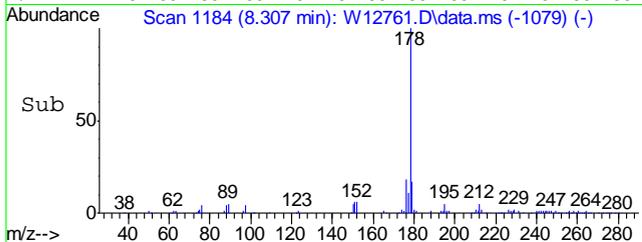
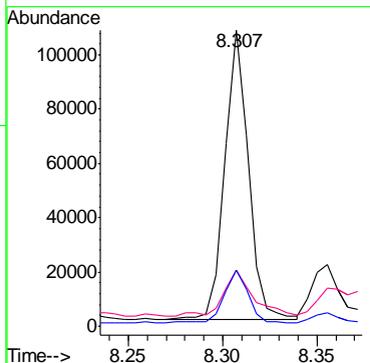
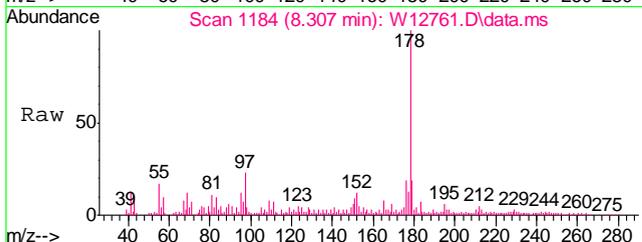


10.16 10



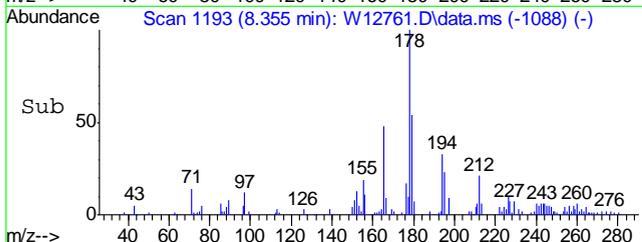
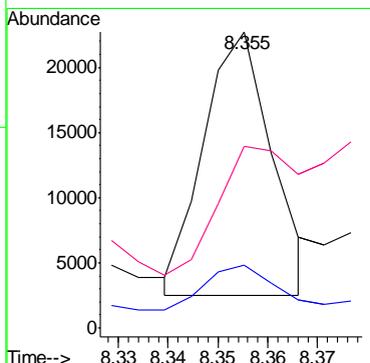
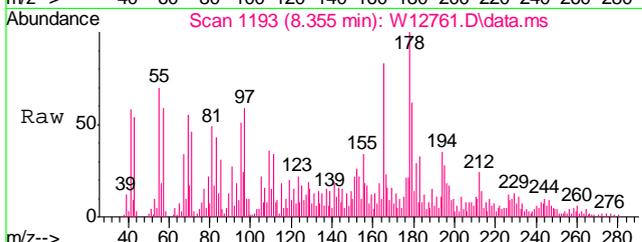
#75
 Phenanthrene
 Concen: 14.73 ppm
 RT: 8.307 min Scan# 1184
 Delta R.T. 0.060 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
178	92496	100	
179	15.6	0.0	45.1
176	18.0	0.0	49.3

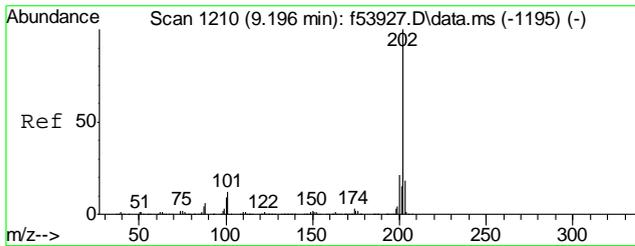


#76
 Anthracene
 Concen: 2.93 ppm m
 RT: 8.355 min Scan# 1193
 Delta R.T. 0.060 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
178	19253	100	
179	61.5	0.0	45.3#
176	21.3	0.0	48.5

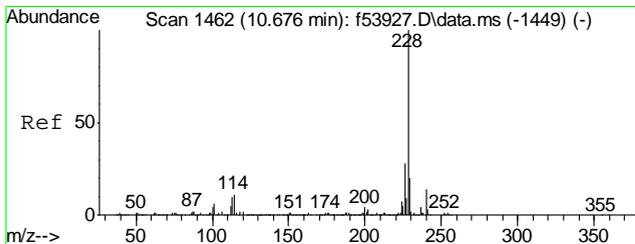
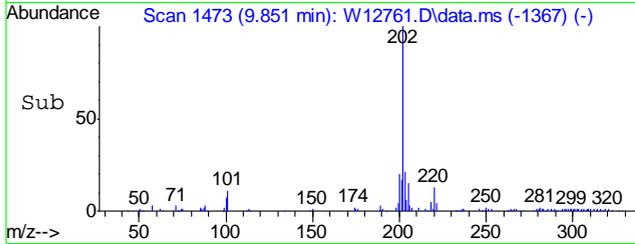
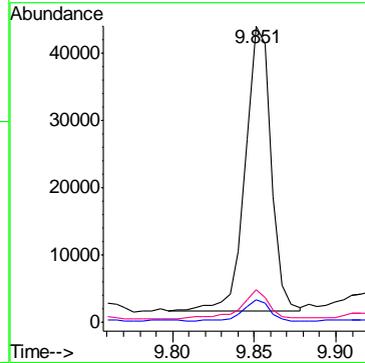
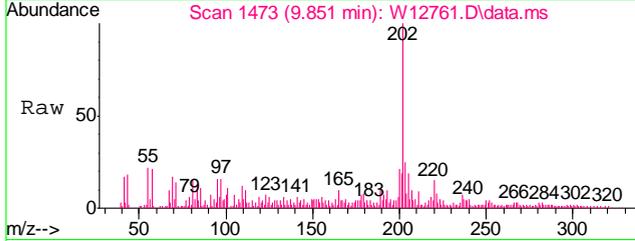


10.1.6 10



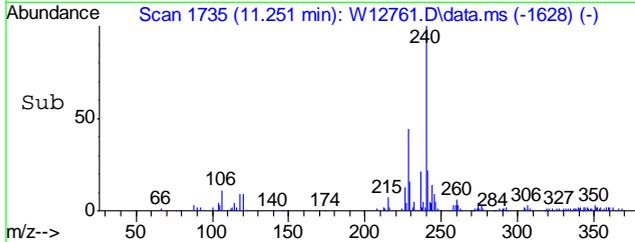
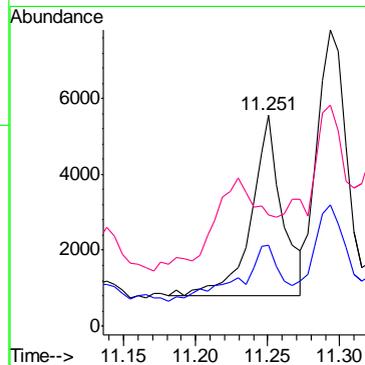
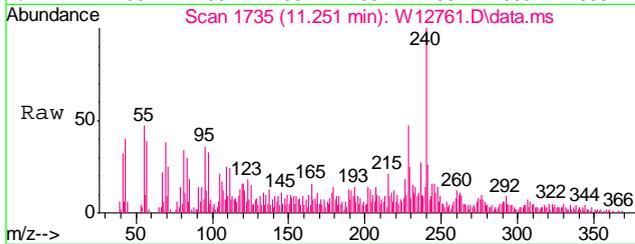
#84
 Pyrene
 Concen: 6.04 ppm
 RT: 9.851 min Scan# 1473
 Delta R.T. 0.066 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
202	46361	100	
101	10.3	0.0	44.8
100	7.2	0.0	41.9

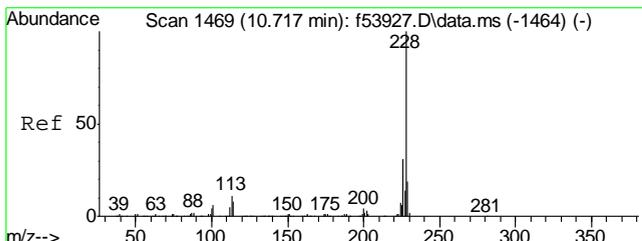


#89
 Benzo[a]anthracene
 Concen: 0.93 ppm
 RT: 11.251 min Scan# 1735
 Delta R.T. 0.071 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
228	7132	100	
229	27.4	0.0	49.6
226	30.6	0.0	56.8

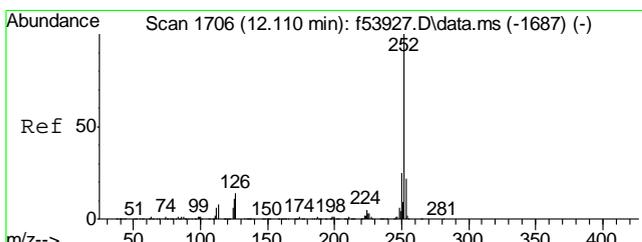
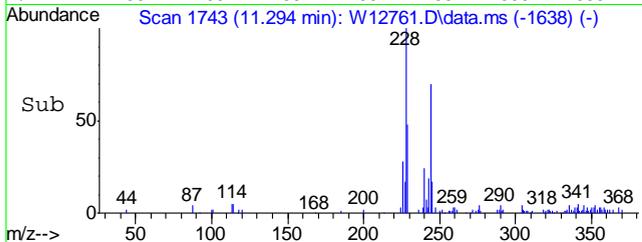
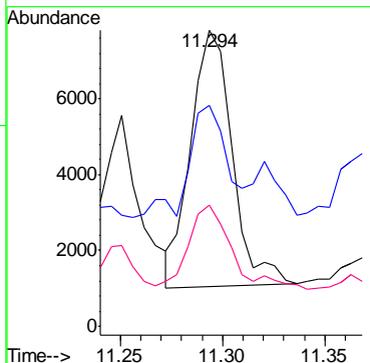
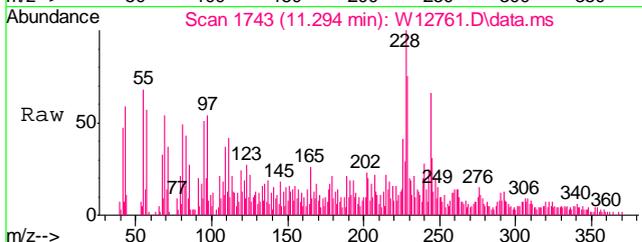


10.16 10



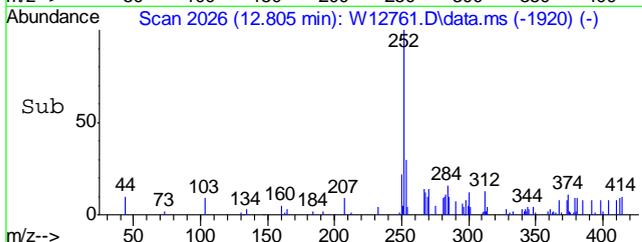
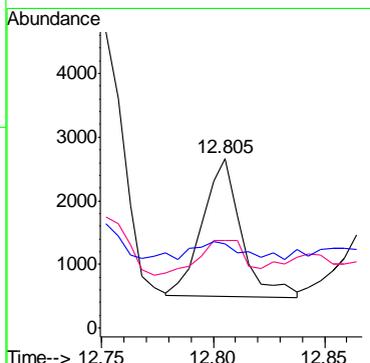
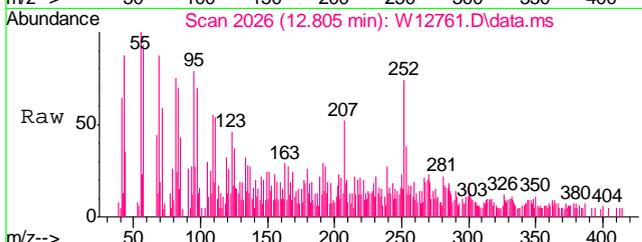
#90
 Chrysene
 Concen: 1.28 ppm
 RT: 11.294 min Scan# 1743
 Delta R.T. 0.061 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
228	9532	100	
226	31.5	0.0	59.8
229	43.3	0.0	49.7

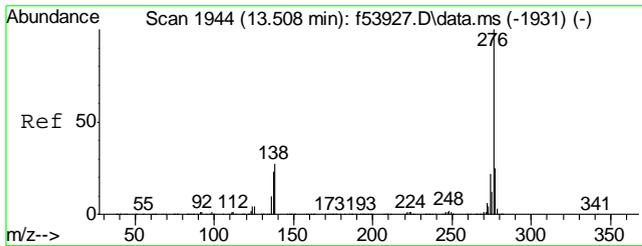


#96
 Benzo[a]pyrene
 Concen: 0.34 ppm
 RT: 12.805 min Scan# 2026
 Delta R.T. 0.065 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Resp	Lower	Upper
252	2646	100	
253	24.1	0.0	51.5
125	6.9	0.0	41.6

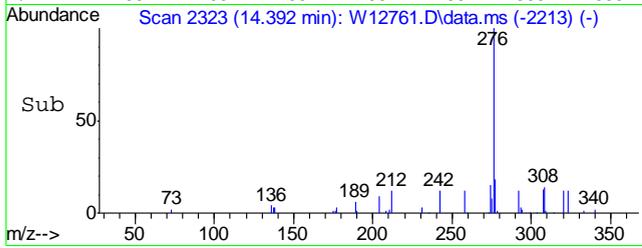
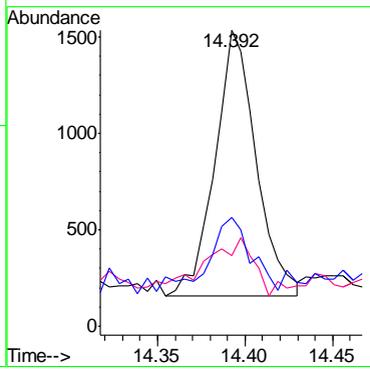
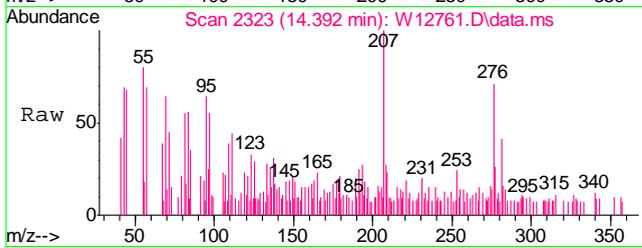


10.1.6
10



#99
 Benzo[g,h,i]perylene
 Concen: 0.27 ppm
 RT: 14.392 min Scan# 2323
 Delta R.T. 0.087 min
 Lab File: W12761.D
 Acq: 3 Jun 2013 11:54 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
138	11.5	0.0	54.4
277	24.1	0.0	53.5



10.1.6
10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
 Data File : W12749.D
 Acq On : 3 Jun 2013 7:10 pm
 Operator : kristinr
 Sample : op33426-mb
 Misc : op33426,msw587,20.25,,,1,1
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jun 07 14:24:15 2013
 Quant Method : C:\msdchem\1\methods\W130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Thu Jun 06 09:42:09 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.263	152	56228	40.00	ppm	0.05
21) 1,4-Dichlorobenzene-d4A	4.263	152	56228	40.00	PPM	# 0.00
23) Naphthalene-d8	5.321	136	203451	40.00	ppm	0.05
41) Naphthalene-d8a	5.321	136	203451	40.00	ppm	# 0.00
43) Acenaphthene-d10	6.859	164	138010	40.00	ppm	0.04
65) Acenaphthene-d10a	6.859	164	138010	40.00	ppm	# 0.00
67) Phenanthrene-d10	8.275	188	259457	40.00	ppm	0.05
80) Phenanthrene-d10a	8.275	188	259706m	40.00	ppm	0.01
82) Chrysene-d12	11.261	240	323505	40.00	ppm	0.05
92) Perylene-d12	12.859	264	320152	40.00	ppm	0.07
System Monitoring Compounds						
5) 2-Fluorophenol	3.323	112	52509	34.49	ppm	0.07
Spiked Amount	100.000	Range	30 - 130	Recovery	=	34.49%
7) Phenol-d5	4.001	99	62054	33.44	ppm	0.06
Spiked Amount	100.000	Range	30 - 130	Recovery	=	33.44%
24) Nitrobenzene-d5	4.728	82	51020	33.96	ppm	0.04
Spiked Amount	50.000	Range	30 - 130	Recovery	=	67.92%
48) 2-Fluorobiphenyl	6.261	172	165898	35.02	ppm	0.04
Spiked Amount	50.000	Range	30 - 130	Recovery	=	70.04%
71) 2,4,6-Tribromophenol	7.602	330	38062	36.38	ppm	0.05
Spiked Amount	100.000	Range	30 - 130	Recovery	=	36.38%
85) Terphenyl-d14	10.038	244	283903	38.07	ppm	0.06
Spiked Amount	50.000	Range	30 - 130	Recovery	=	76.14%

Target Compounds Qvalue

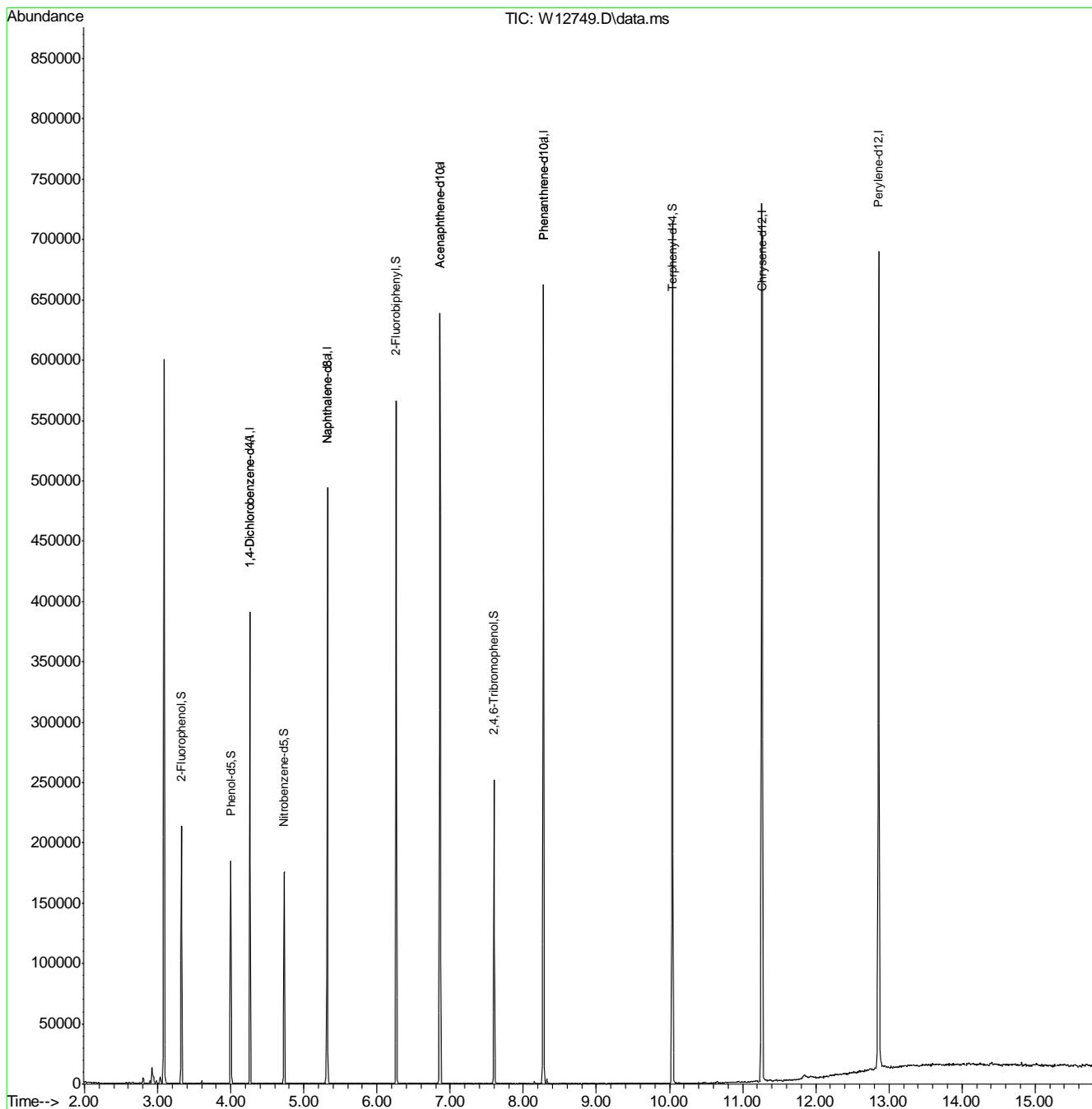
(#) = qualifier out of range (m) = manual integration (+) = signals summed

10.2.1
10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130603\
Data File : W12749.D
Acq On : 3 Jun 2013 7:10 pm
Operator : kristinr
Sample : op33426-mb
Misc : op33426,msw587,20.25,,,1,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jun 07 14:24:15 2013
Quant Method : C:\msdchem\1\methods\W130530_8270+.m
Quant Title : SW-864 Method 8270
QLast Update : Thu Jun 06 09:42:09 2013
Response via : Initial Calibration



GC Volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB37539

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33302-MB	BK25136.D	1	05/24/13	AP	05/23/13	OP33302	GBK874

The QC reported here applies to the following samples:

Method: SW846 8011

JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.5	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	Bromofluorobenzene (S)	117%	61-167%
460-00-4	Bromofluorobenzene (S)	141%	61-167%

Blank Spike Summary

Job Number: JB37539

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33302-BS	BK25137.D	1	05/24/13	AP	05/23/13	OP33302	GBK874

The QC reported here applies to the following samples:

Method: SW846 8011

JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
106-93-4	1,2-Dibromoethane	32.8	32.5	99	56-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	110%	61-167%
460-00-4	Bromofluorobenzene (S)	114%	61-167%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB37539

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33302-MS	BK25138.D	1	05/24/13	AP	05/23/13	OP33302	GBK874
OP33302-MSD	BK25139.D	1	05/24/13	AP	05/23/13	OP33302	GBK874
JB37539-1	BK25140.D	1	05/24/13	AP	05/23/13	OP33302	GBK874

The QC reported here applies to the following samples:

Method: SW846 8011

JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

CAS No.	Compound	JB37539-1 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
106-93-4	1,2-Dibromoethane	ND	38.2	44.4	116	45.3	120	2	48-141/27	

CAS No.	Surrogate Recoveries	MS	MSD	JB37539-1	Limits
460-00-4	Bromofluorobenzene (S)	127%	132%	124%	61-167%
460-00-4	Bromofluorobenzene (S)	131%	131%	127%	61-167%

11.3.1

11

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: JB37539

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8011

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S1 ^b
JB37539-1	BK25140.D	124.0	127.0
JB37539-2	BK25141.D	123.0	132.0
JB37539-3	BK25142.D	123.0	139.0
JB37539-4	BK25143.D	122.0	134.0
JB37539-5	BK25144.D	135.0	144.0
JB37539-6	BK25145.D	137.0	158.0
OP33302-BS	BK25137.D	110.0	114.0
OP33302-MB	BK25136.D	117.0	141.0
OP33302-MS	BK25138.D	127.0	131.0
OP33302-MSD	BK25139.D	132.0	131.0

Surrogate Compounds

Recovery Limits

S1 = Bromofluorobenzene (S)

61-167%

(a) Recovery from GC signal #2

(b) Recovery from GC signal #1

11.4.1

11

GC Surrogate Retention Time Summary

Job Number: JB37539
 Account: ALNJ Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	GBK874-CC874	Injection Date:	05/24/13
Lab File ID:	BK25135.D	Injection Time:	19:24
Instrument ID:	GCBK	Method:	SW846 8011

S1^a S1^b
 RT RT

Check Std	4.21	4.54
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP33302-MB	BK25136.D	05/24/13	19:48	4.21	4.54
OP33302-BS	BK25137.D	05/24/13	20:11	4.21	4.54
OP33302-MS	BK25138.D	05/24/13	20:34	4.21	4.54
OP33302-MSD	BK25139.D	05/24/13	20:59	4.21	4.54
JB37539-1	BK25140.D	05/24/13	21:22	4.21	4.54
JB37539-2	BK25141.D	05/24/13	21:46	4.21	4.54
JB37539-3	BK25142.D	05/24/13	22:10	4.21	4.54
JB37539-4	BK25143.D	05/24/13	22:34	4.21	4.54
JB37539-5	BK25144.D	05/24/13	22:58	4.21	4.54
JB37539-6	BK25145.D	05/24/13	23:23	4.21	4.54
GBK874-ECC874	BK25146.D	05/24/13	23:47	4.21	4.54

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

11.5.1
11

Initial Calibration Summary

Job Number: JB37539

Sample: GBK874-ICC874

Account: ALNJ Accutest New Jersey

Lab FileID: BK25108.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Response Factor Report GCBK

Method : C:\msdchem\1\METHODS\EDS130524.M (ChemStation Integrator)
Title : EDB /Rtx35/DB1701
Last Update : Tue May 28 07:48:27 2013
Response via : Initial Calibration

Calibration Files

1 =BK25107.d 2 =BK25108.d 3 =BK25109.d 4 =BK25110.d
5 =BK25111.d 6 =BK25112.d

Compound	1	2	3	4	5	6	Avg	%RSD
1) 1,2-Dibromoethane	2.499	2.604	2.777	3.003	3.058	2.018	2.660 E8	14.37
----- Quadratic regression -----								
Response Ratio = -35331077.80275 + 288550645.50937 *A + -787897.99152 *A^2								
Coefficient = 0.9978								

2) s 4-Bromofluorobenzen	1.272	1.306	1.296	1.225	1.300	1.095	1.249 E7	6.50
3) 1,2-Dibromo-3-chlor	5.300	5.204	5.221	5.116	4.745	4.700	5.048 E8	5.13

Signal #2

1) 1,2-Dibromoethane	2.943	3.056	3.003	2.879	2.438	2.442	2.793 E6	10.03
----- Quadratic regression -----								
Response Ratio = -930532.70507 + 3131764.13817 *A + -3297.78156 *A^2								
Coefficient = 0.9997								
2) s 4-Bromofluorobenzen	1.842	1.989	2.138	2.163	2.054	1.985	2.029 E5	5.79
3) 1,2-Dibromo-3-chlor	5.735	5.685	5.571	5.440	5.341	5.094	5.478 E6	4.36

(#) = Out of Range

EDS130524.M

Tue May 28 07:52:13 2013

11.6.1

11

Initial Calibration Verification

Job Number: JB37539

Sample: GBK874-ICV874

Account: ALNJ Accutest New Jersey

Lab FileID: BK25113.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BK...24\BK25113.d\ECD1A.ch Vial: 57
Signal #2 : C:\msdchem\1\DATA\BK130524\BK25113.d\ECD2B.ch
Acq On : 24 May 2013 10:57 am Operator: andrip
Sample : icv874-20,edb-icv Inst : GCBK
Misc : op33301,gbk874,30,,,50,,,s Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS130524.M (ChemStation Integrator)
Title : EDB /Rtx35/DB1701
Last Update : Tue May 28 07:48:27 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 115%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
----- True Calc. % Drift -----							
1 1,2-Dibromoethane	20.000	19.092	4.5	100	0.00	3.30	3.36
----- AvgRF CCRF % Dev -----							
2 s 4-Bromofluorobenzene	12.491	12.329 E6	1.3	94	0.00	4.51	4.57
3 1,2-Dibromo-3-chloropr	504.765	512.687 E6	-1.6	99	0.00	5.93	5.99

***** Signal #2 *****

----- True Calc. % Drift -----							
1 1,2-Dibromoethane	20.000	20.719	-3.6	102	0.00	3.14	3.20
----- AvgRF CCRF % Dev -----							
2 s 4-Bromofluorobenzene	202.862	205.700 E3	-1.4	103	0.00	4.18	4.24
3 1,2-Dibromo-3-chloropr	5.478	5.797 E6	-5.8	102	0.00	5.84	5.90

(#) = Out of Range SPCC's out = 0 CCC's out = 0
BK25108.d EDS130524.M Tue May 28 07:51:22 2013

11.62
11

Continuing Calibration Summary

Job Number: JB37539

Sample: GBK874-CC874

Account: ALNJ Accutest New Jersey

Lab FileID: BK25135.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BK...24\BK25135.d\ECD1A.ch Vial: 100
Signal #2 : C:\msdchem\1\DATA\BK130524\BK25135.d\ECD2B.ch
Acq On : 24 May 2013 7:24 pm Operator: andrip
Sample : cc874-20,edb-2 Inst : GCBK
Misc : op33301,gbk874,30,,,50,,,s Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS130524.M (ChemStation Integrator)
Title : EDB /Rtx35/DB1701
Last Update : Tue May 28 07:48:27 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 115%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
----- True Calc. % Drift -----							
1 1,2-Dibromoethane	20.000	17.628	11.9	92	0.00	3.30	3.36
----- AvgRF CCRF % Dev -----							
2 s 4-Bromofluorobenzene	12.491	11.483 E6	8.1	88	0.00	4.51	4.57
3 1,2-Dibromo-3-chloropr	504.765	491.173 E6	2.7	94	0.00	5.93	5.99

***** Signal #2 *****

----- True Calc. % Drift -----							
1 1,2-Dibromoethane	20.000	19.597	2.0	97	0.00	3.14	3.20
----- AvgRF CCRF % Dev -----							
2 s 4-Bromofluorobenzene	202.862	194.516 E3	4.1	98	0.00	4.18	4.24
3 1,2-Dibromo-3-chloropr	5.478	5.507 E6	-0.5	97	0.00	5.84	5.90

(#) = Out of Range SPCC's out = 0 CCC's out = 0
BK25108.d EDS130524.M Tue May 28 07:57:52 2013

Continuing Calibration Summary

Job Number: JB37539

Sample: GBK874-ECC874

Account: ALNJ Accutest New Jersey

Lab FileID: BK25146.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BK...24\BK25146.d\ECD1A.ch Vial: 99
Signal #2 : C:\msdchem\1\DATA\BK130524\BK25146.d\ECD2B.ch
Acq On : 24 May 2013 11:47 pm Operator: andrip
Sample : ecc874-20,edb-2 Inst : GCBK
Misc : op33302,gbk874,30,,,50,,,s Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS130524.M (ChemStation Integrator)
Title : EDB /Rtx35/DB1701
Last Update : Tue May 28 07:48:27 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 115%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
----- True Calc. % Drift -----							
1 1,2-Dibromoethane	20.000	17.442	12.8	91	0.00	3.30-	3.36
----- AvgRF CCRF % Dev -----							
2 s 4-Bromofluorobenzene	12.491	11.499 E6	7.9	88	0.00	4.51-	4.57
3 1,2-Dibromo-3-chloropr	504.765	452.449 E6	10.4	87	0.00	5.93-	5.99

***** Signal #2 *****

----- True Calc. % Drift -----							
1 1,2-Dibromoethane	20.000	19.833	0.8	98	0.00	3.14-	3.20
----- AvgRF CCRF % Dev -----							
2 s 4-Bromofluorobenzene	202.862	192.049 E3	5.3	97	0.00	4.18-	4.24
3 1,2-Dibromo-3-chloropr	5.478	5.350 E6	2.3	94	0.00	5.84-	5.90

(#) = Out of Range SPCC's out = 0 CCC's out = 0
BK25108.d EDS130524.M Tue May 28 07:56:20 2013

11.64

11

GC Volatiles

Raw Data

(Accutest Labs of New England, Inc.)

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25140.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 9:22 pm
 Operator : andrip
 Sample : jb37539-1,op33302
 Misc : op33302,gbk874,30.25,,,50,,s
 ALS Vial : 25 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:04:49 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L

System Monitoring Compounds						
2) s 4-Bromofl...	4.543	4.214	795.0E6	12565162	63.647m	61.939m
Spiked Amount	50.000	Range 26 - 158	Recovery	=	127.29%	123.88%
Target Compounds						
1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

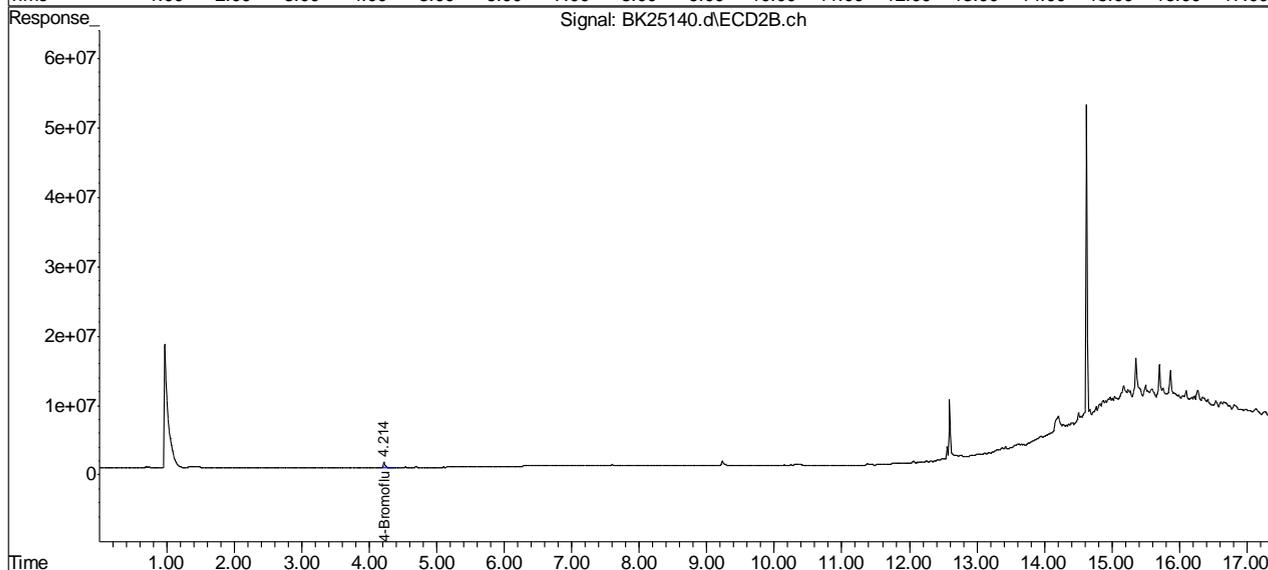
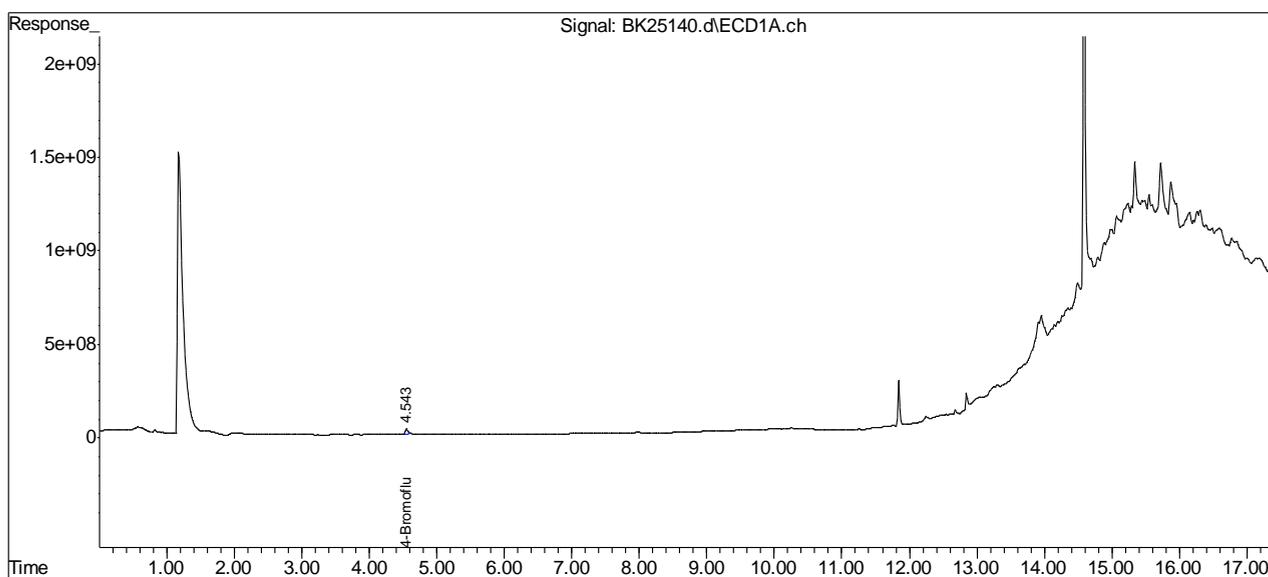
12.1.1
12

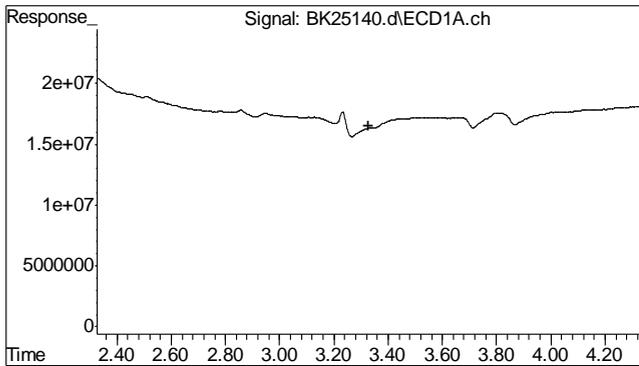
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
Data File : BK25140.d
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
Acq On : 24 May 2013 9:22 pm
Operator : andrip
Sample : jb37539-1,op33302
Misc : op33302,gbk874,30.25,,,50,,s
ALS Vial : 25 Sample Multiplier: 1

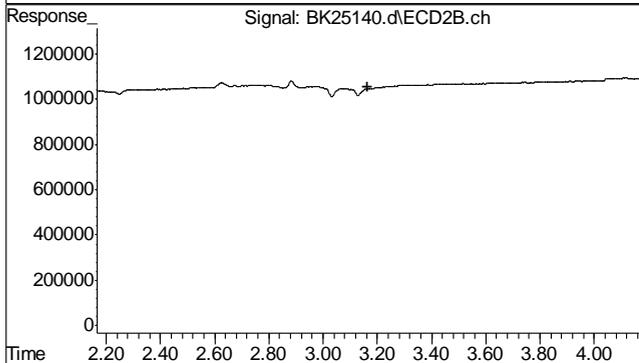
Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: May 28 10:04:49 2013
Quant Method : C:\msdchem\1\METHODS\EDS130524.M
Quant Title : EDB /Rtx35/DB1701
QLast Update : Tue May 28 07:48:27 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

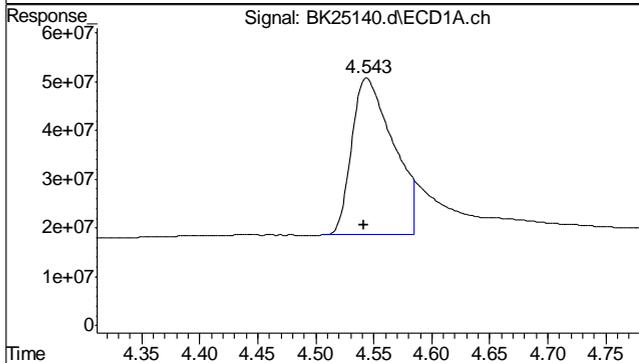




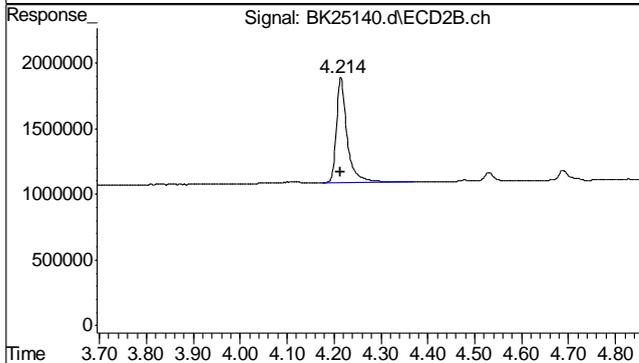
#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.326 min
 Response: 0
 Conc: N.D.



#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.165 min
 Response: 0
 Conc: N.D.

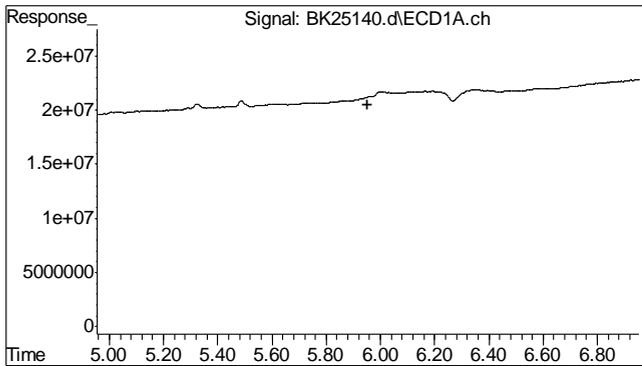


#2 4-Bromofluorobenzene
 R.T.: 4.543 min
 Delta R.T.: 0.001 min
 Response: 795041929
 Conc: 63.65 ug/L m

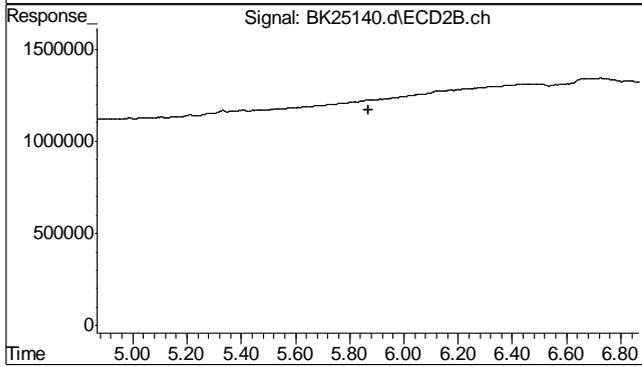


#2 4-Bromofluorobenzene
 R.T.: 4.214 min
 Delta R.T.: 0.000 min
 Response: 12565162
 Conc: 61.94 ug/L m

12.1.1 12



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.954 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.868 min
Response: 0
Conc: N.D.

12.1.1
12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25141.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 9:46 pm
 Operator : andrip
 Sample : jb37539-2,op33302
 Misc : op33302,gbk874,30.42,,,50,,s
 ALS Vial : 26 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:05:01 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L

System Monitoring Compounds						
2) s 4-Bromofl...	4.541	4.213	826.2E6	12488428	66.138m	61.561m
Spiked Amount	50.000	Range	26 - 158	Recovery	= 132.28%	123.12%

Target Compounds						
1)	1,2-Dibro...	0.000	0.000	0	0	N.D.
3)	1,2-Dibro...	0.000	0.000	0	0	N.D.

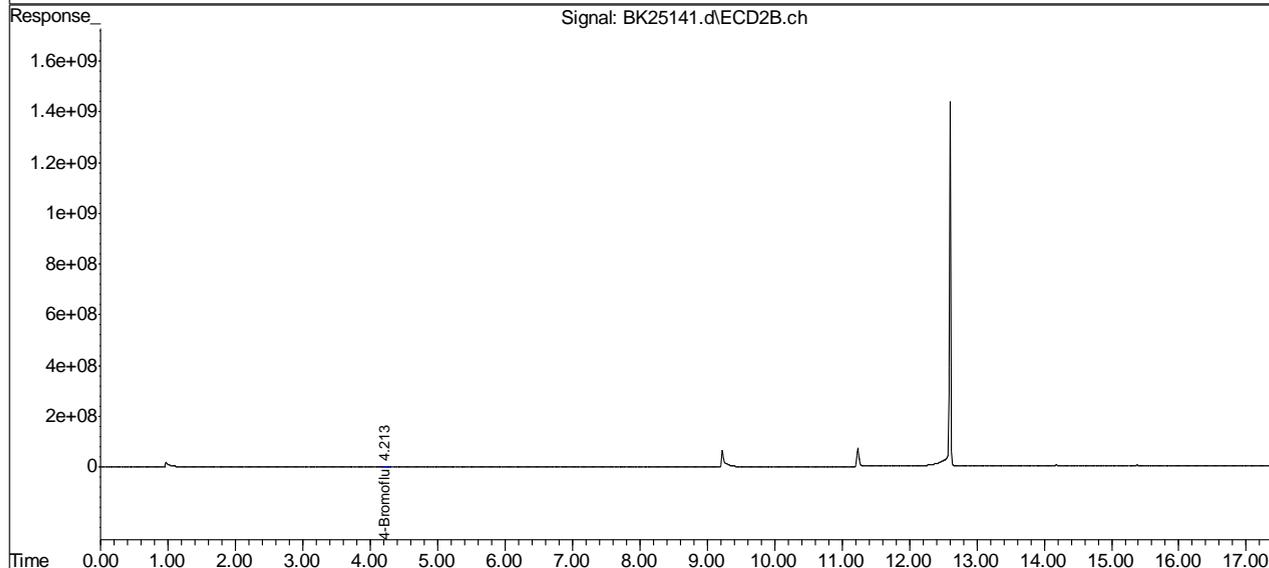
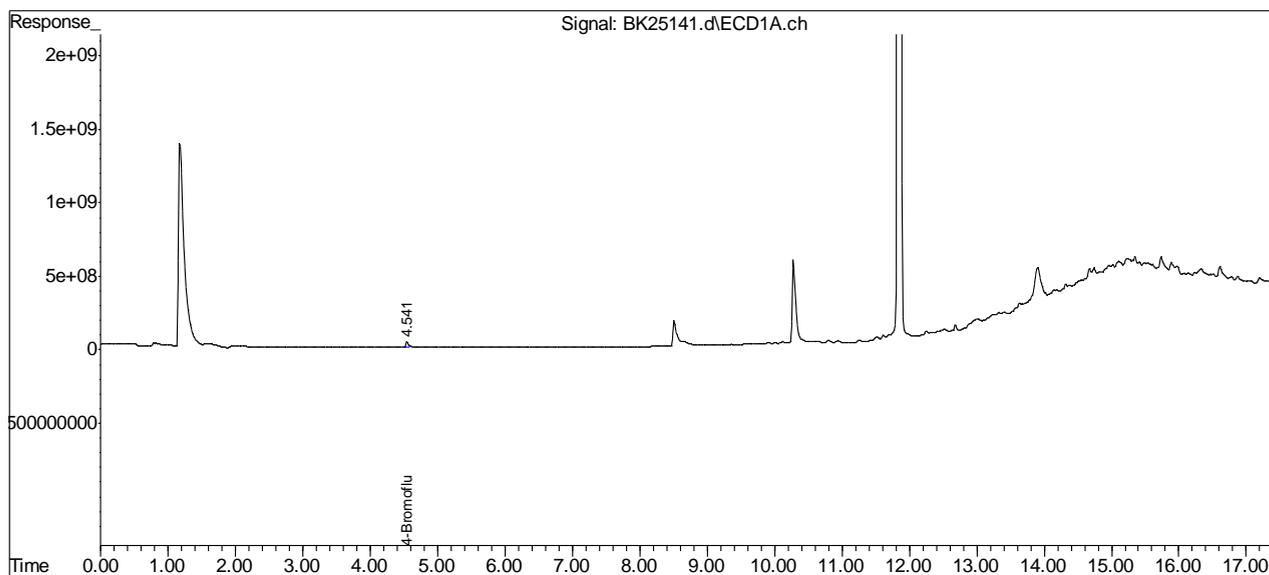
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

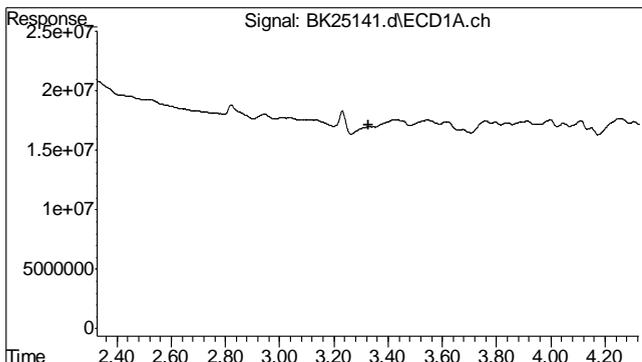
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
Data File : BK25141.d
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
Acq On : 24 May 2013 9:46 pm
Operator : andrip
Sample : jb37539-2,op33302
Misc : op33302,gbk874,30.42,,,50,,s
ALS Vial : 26 Sample Multiplier: 1

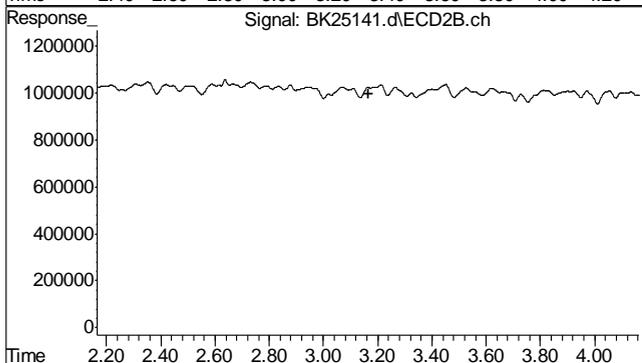
Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: May 28 10:05:01 2013
Quant Method : C:\msdchem\1\METHODS\EDS130524.M
Quant Title : EDB /Rtx35/DB1701
QLast Update : Tue May 28 07:48:27 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

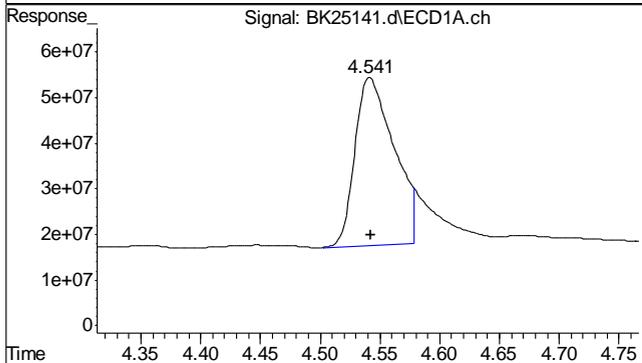




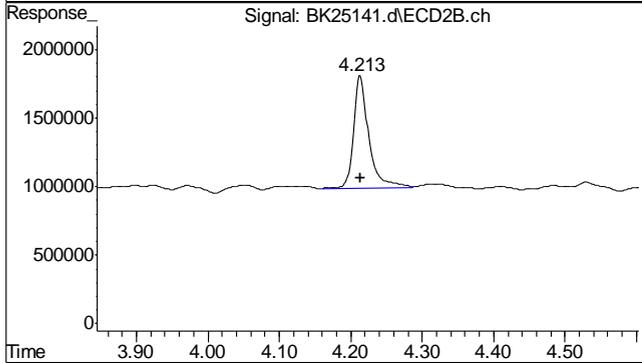
#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.326 min
 Response: 0
 Conc: N.D.



#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.165 min
 Response: 0
 Conc: N.D.

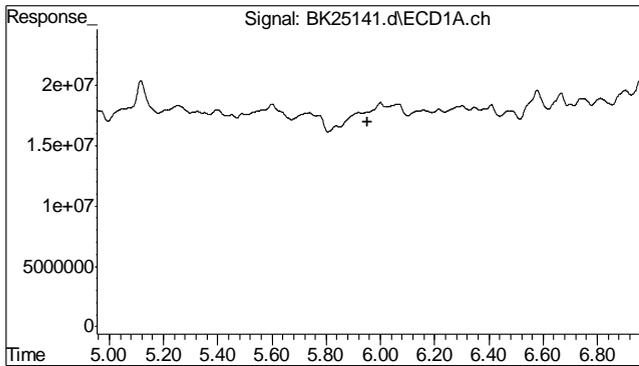


#2 4-Bromofluorobenzene
 R.T.: 4.541 min
 Delta R.T.: -0.001 min
 Response: 826152918
 Conc: 66.14 ug/L m

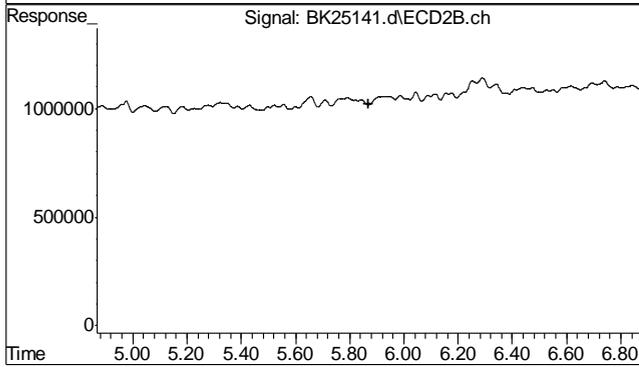


#2 4-Bromofluorobenzene
 R.T.: 4.213 min
 Delta R.T.: -0.001 min
 Response: 12488428
 Conc: 61.56 ug/L m

12.1.2
 12



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.954 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.868 min
Response: 0
Conc: N.D.

12.1.2
12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25142.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 10:10 pm
 Operator : andrip
 Sample : jb37539-3,op33302
 Misc : op33302,gbk874,30.68,,,50,,,s
 ALS Vial : 27 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:05:11 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L

System Monitoring Compounds						
2) s 4-Bromofl...	4.543	4.214	868.8E6	12470407	69.550m	61.472m
Spiked Amount	50.000	Range 26 - 158	Recovery	=	139.10%	122.94%

Target Compounds						
1)	1,2-Dibro...	0.000	0.000	0	0	N.D. N.D.
3)	1,2-Dibro...	0.000	0.000	0	0	N.D. N.D.

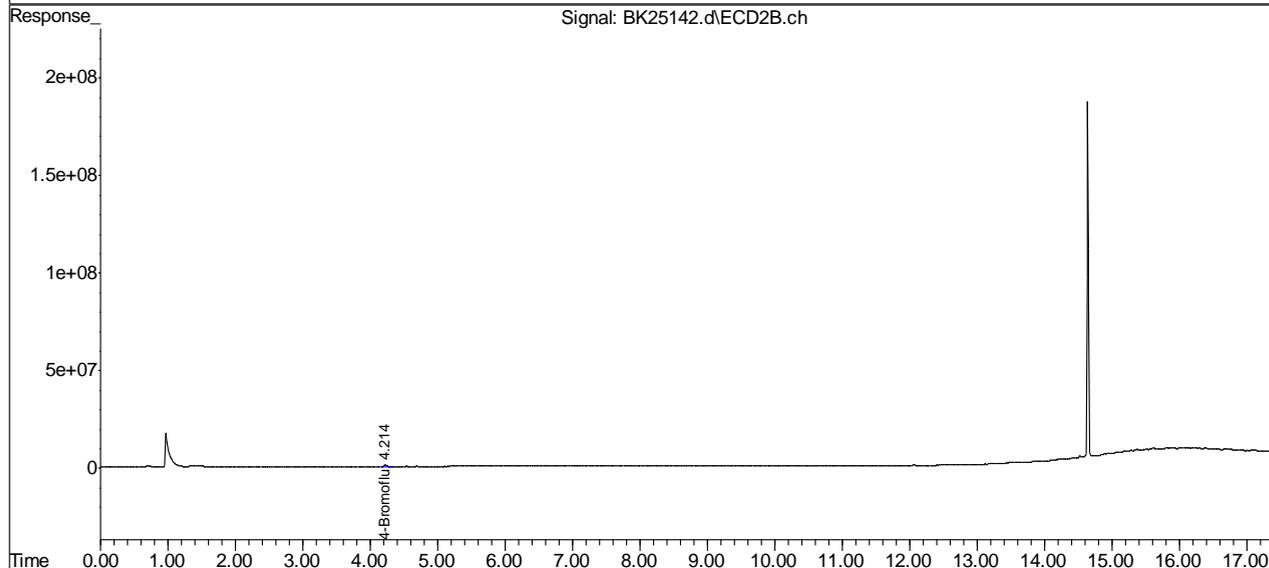
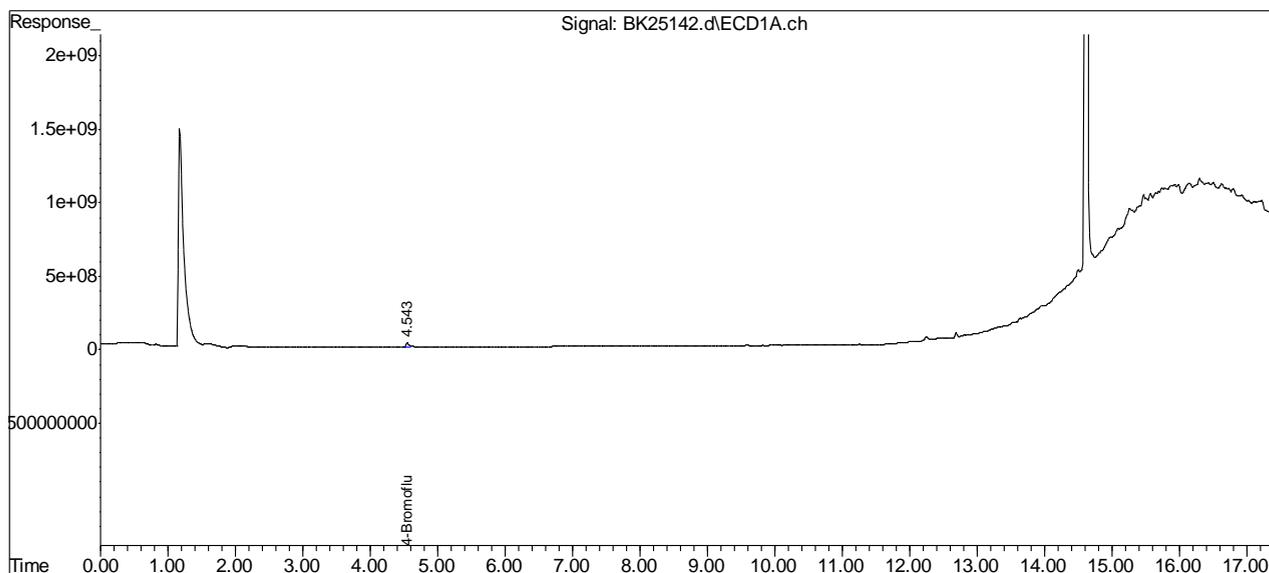
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

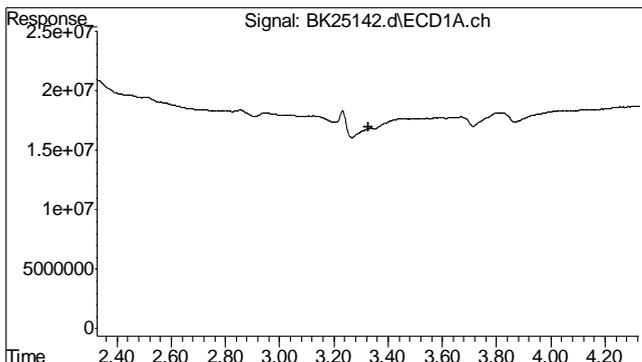
Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25142.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 10:10 pm
 Operator : andrip
 Sample : jb37539-3,op33302
 Misc : op33302,gbk874,30.68,,,50,,s
 ALS Vial : 27 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:05:11 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

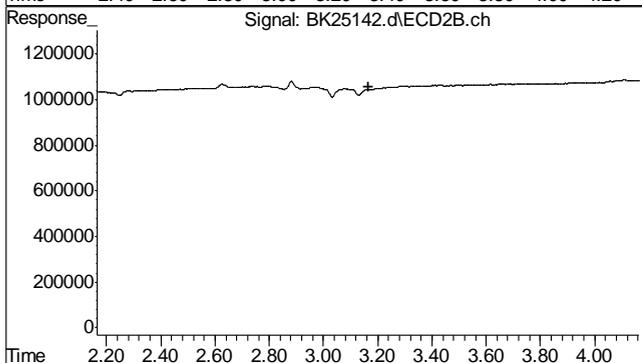
Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :



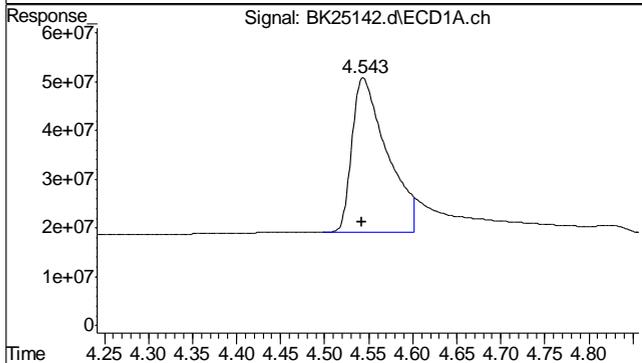
12.1.3
12



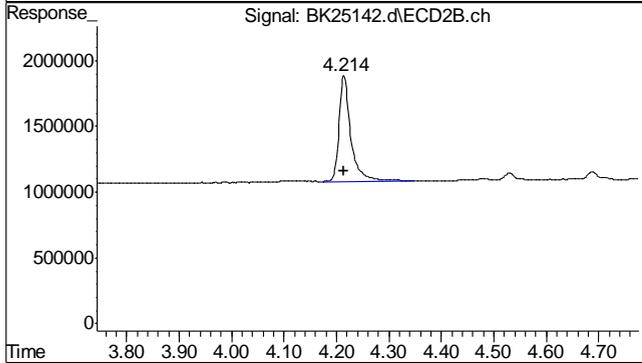
#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.326 min
 Response: 0
 Conc: N.D.



#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.165 min
 Response: 0
 Conc: N.D.

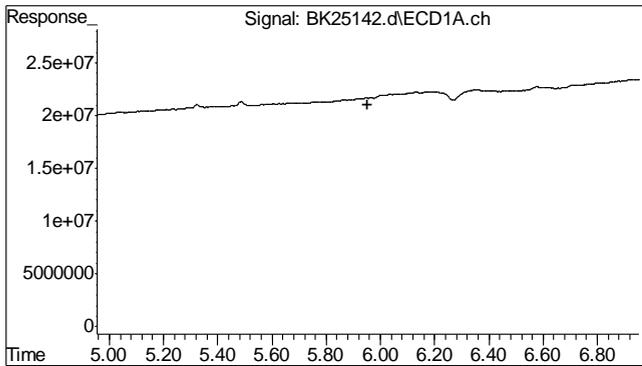


#2 4-Bromofluorobenzene
 R.T.: 4.543 min
 Delta R.T.: 0.000 min
 Response: 868770568
 Conc: 69.55 ug/L m

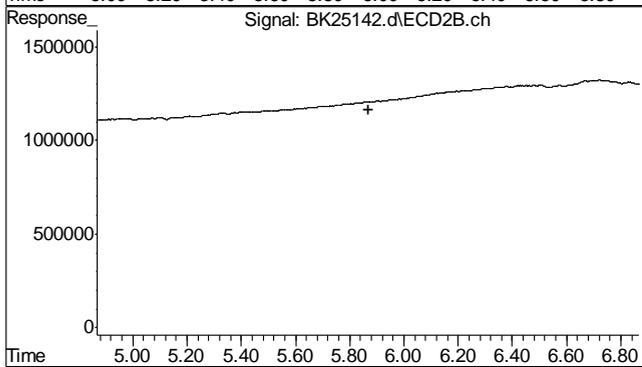


#2 4-Bromofluorobenzene
 R.T.: 4.214 min
 Delta R.T.: 0.000 min
 Response: 12470407
 Conc: 61.47 ug/L m

12.1.3
 12



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.954 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.868 min
Response: 0
Conc: N.D.

12.1.3
12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25143.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 10:34 pm
 Operator : andrip
 Sample : jb37539-4,op33302
 Misc : op33302,gbk874,30.28,,,50,,s
 ALS Vial : 28 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:05:23 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L

System Monitoring Compounds						
2) s 4-Bromofl...	4.544	4.214	836.6E6	12356338	66.973m	60.910m
Spiked Amount	50.000	Range 26 - 158	Recovery =	133.95%	121.82%	
Target Compounds						
1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

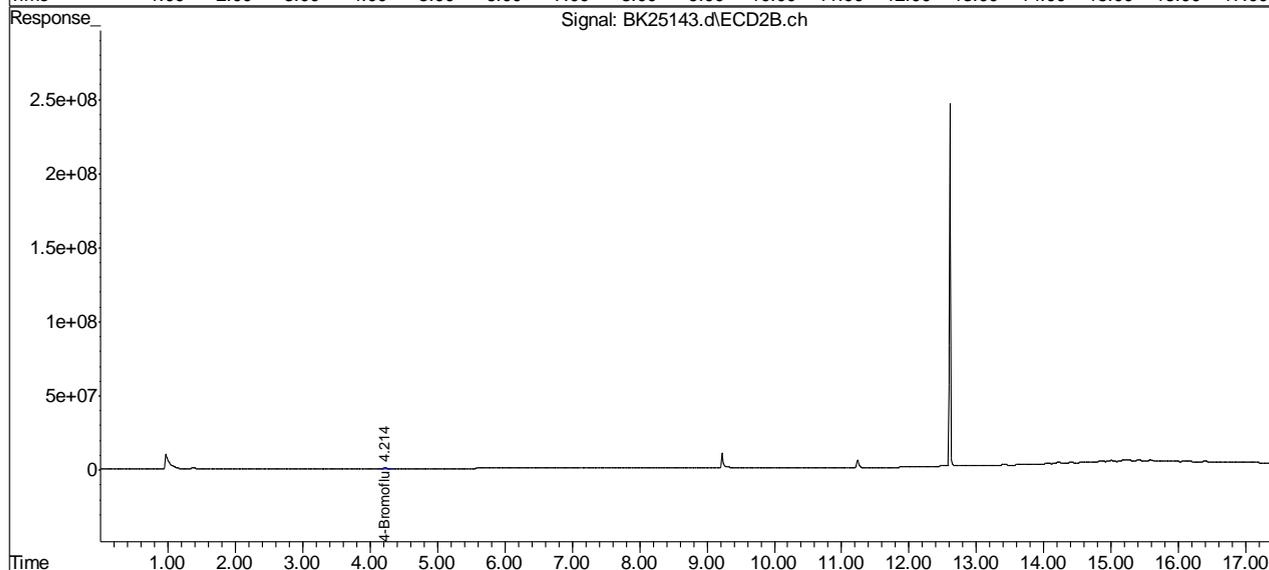
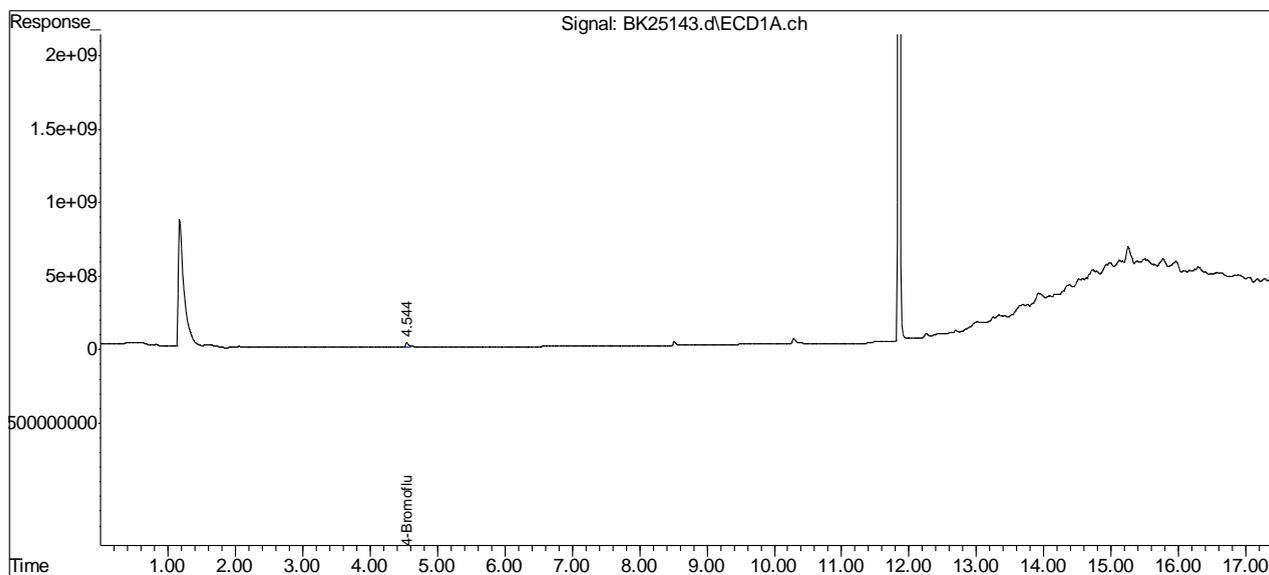
12.14
12

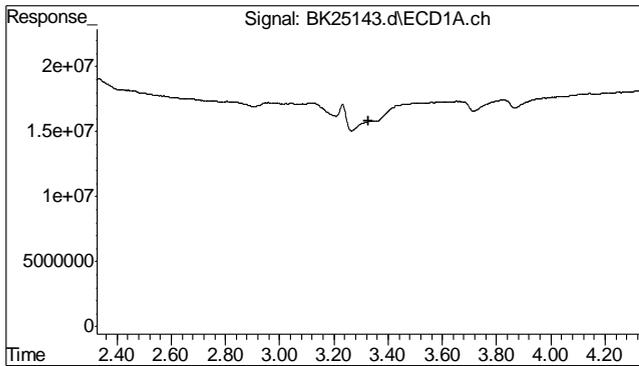
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
Data File : BK25143.d
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
Acq On : 24 May 2013 10:34 pm
Operator : andrip
Sample : jb37539-4,op33302
Misc : op33302,gbk874,30.28,,,50,,s
ALS Vial : 28 Sample Multiplier: 1

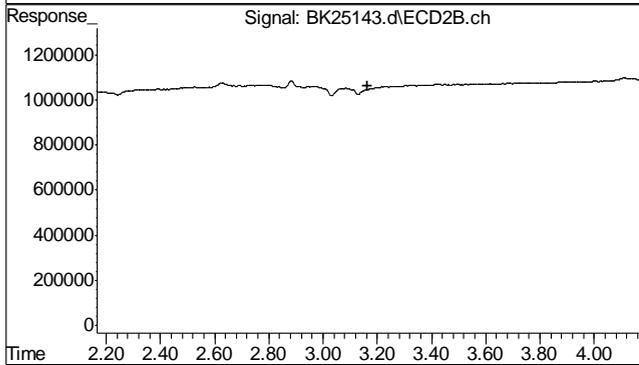
Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: May 28 10:05:23 2013
Quant Method : C:\msdchem\1\METHODS\EDS130524.M
Quant Title : EDB /Rtx35/DB1701
QLast Update : Tue May 28 07:48:27 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

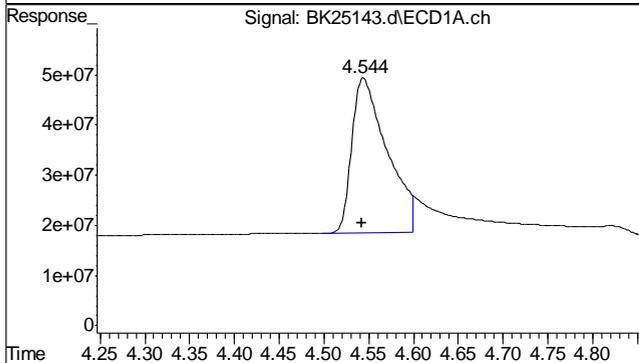




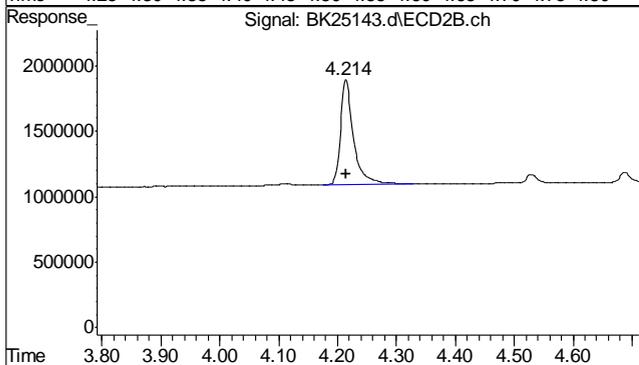
#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.326 min
 Response: 0
 Conc: N.D.



#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.165 min
 Response: 0
 Conc: N.D.

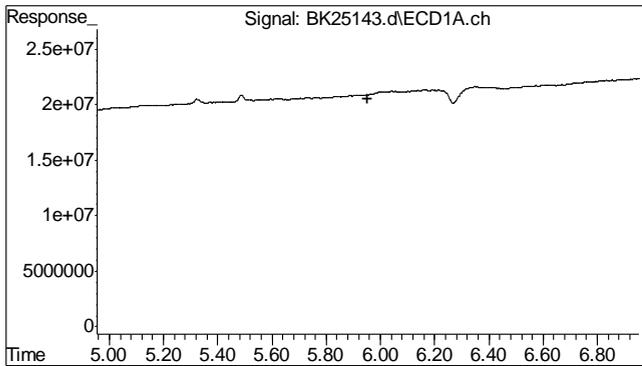


#2 4-Bromofluorobenzene
 R.T.: 4.544 min
 Delta R.T.: 0.002 min
 Response: 836585023
 Conc: 66.97 ug/L m

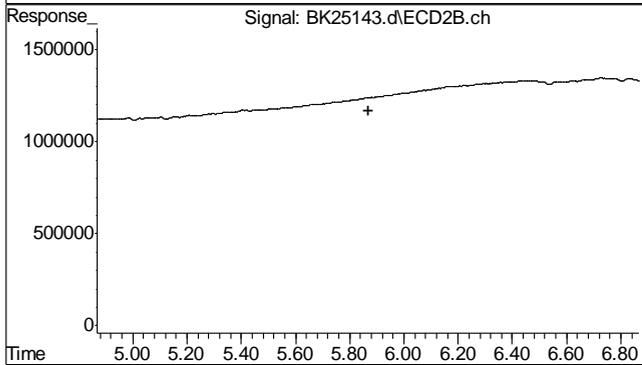


#2 4-Bromofluorobenzene
 R.T.: 4.214 min
 Delta R.T.: 0.000 min
 Response: 12356338
 Conc: 60.91 ug/L m

12.1.4 12



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.954 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.868 min
Response: 0
Conc: N.D.

12.1.4
12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25144.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 10:58 pm
 Operator : andrip
 Sample : jb37539-5,op33302
 Misc : op33302,gbk874,30.32,,,50,,s
 ALS Vial : 29 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:05:35 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L

System Monitoring Compounds						
2) s 4-Bromofl...	4.544	4.214	897.3E6	13705885	71.834m	67.563m
Spiked Amount	50.000	Range	26 - 158	Recovery	= 143.67%	135.13%
Target Compounds						
1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

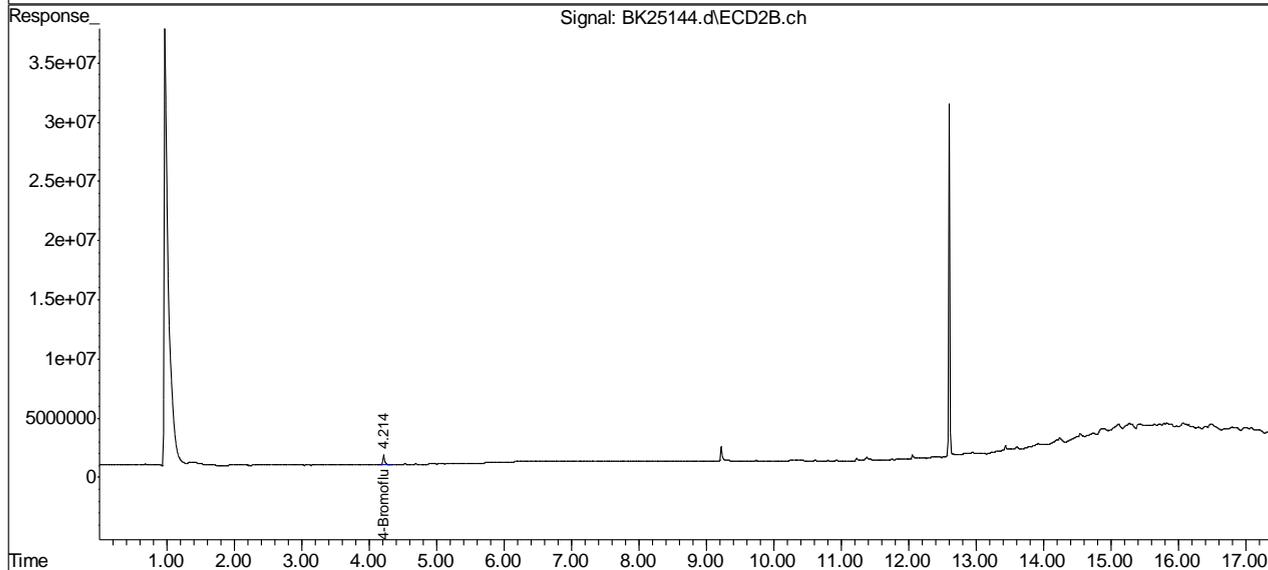
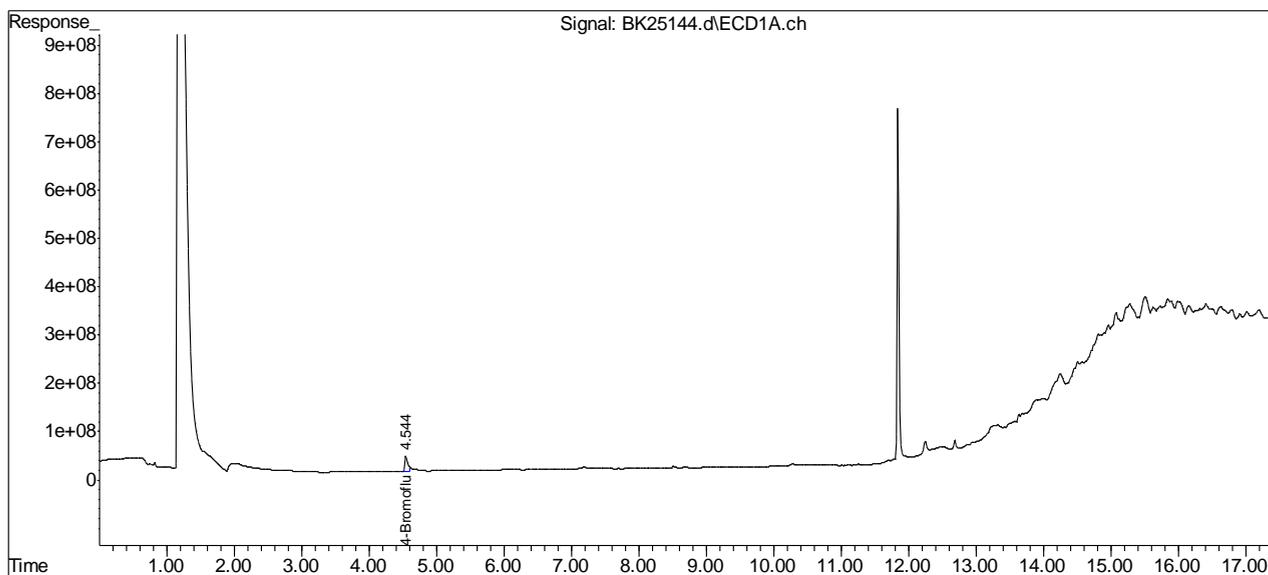
12.1.5
12

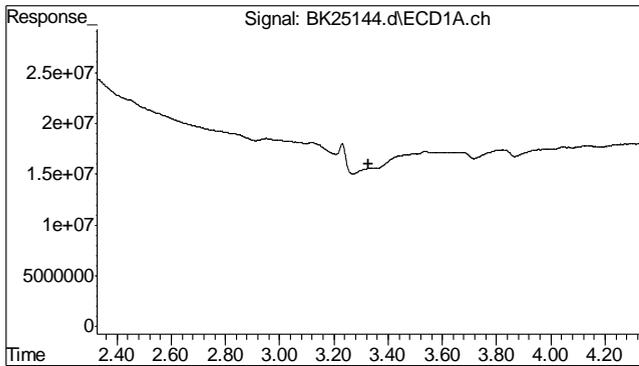
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
Data File : BK25144.d
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
Acq On : 24 May 2013 10:58 pm
Operator : andrip
Sample : jb37539-5,op33302
Misc : op33302,gbk874,30.32,,,50,,s
ALS Vial : 29 Sample Multiplier: 1

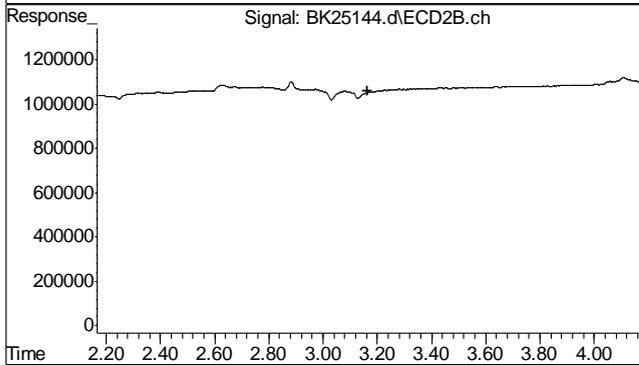
Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: May 28 10:05:35 2013
Quant Method : C:\msdchem\1\METHODS\EDS130524.M
Quant Title : EDB /Rtx35/DB1701
QLast Update : Tue May 28 07:48:27 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

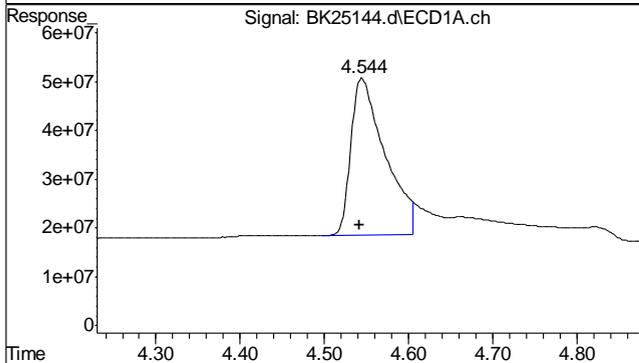




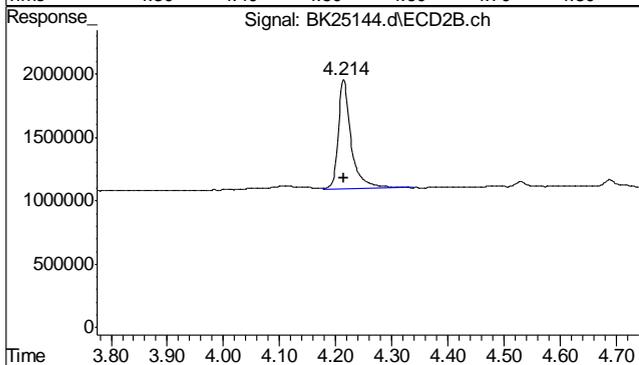
#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.326 min
 Response: 0
 Conc: N.D.



#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.165 min
 Response: 0
 Conc: N.D.

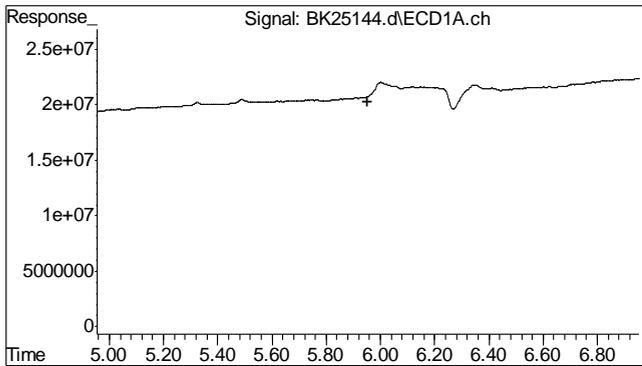


#2 4-Bromofluorobenzene
 R.T.: 4.544 min
 Delta R.T.: 0.002 min
 Response: 897298464
 Conc: 71.83 ug/L m

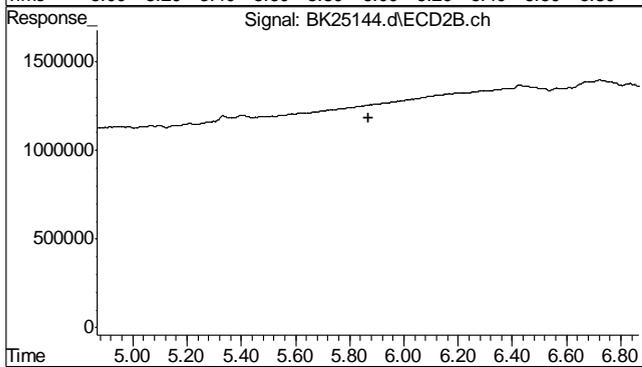


#2 4-Bromofluorobenzene
 R.T.: 4.214 min
 Delta R.T.: 0.000 min
 Response: 13705885
 Conc: 67.56 ug/L m

12.1.5 12



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.954 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.868 min
Response: 0
Conc: N.D.

12.1.5
12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25145.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 11:23 pm
 Operator : andrip
 Sample : jb37539-6,op33302
 Misc : op33302,gbk874,30.37,,,50,,s
 ALS Vial : 30 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:05:47 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L

System Monitoring Compounds						
2) s 4-Bromofl...	4.543	4.213	989.4E6	13850935	79.205m	68.278m
Spiked Amount	50.000	Range 26 - 158	Recovery	=	158.41%#	136.56%
Target Compounds						
1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

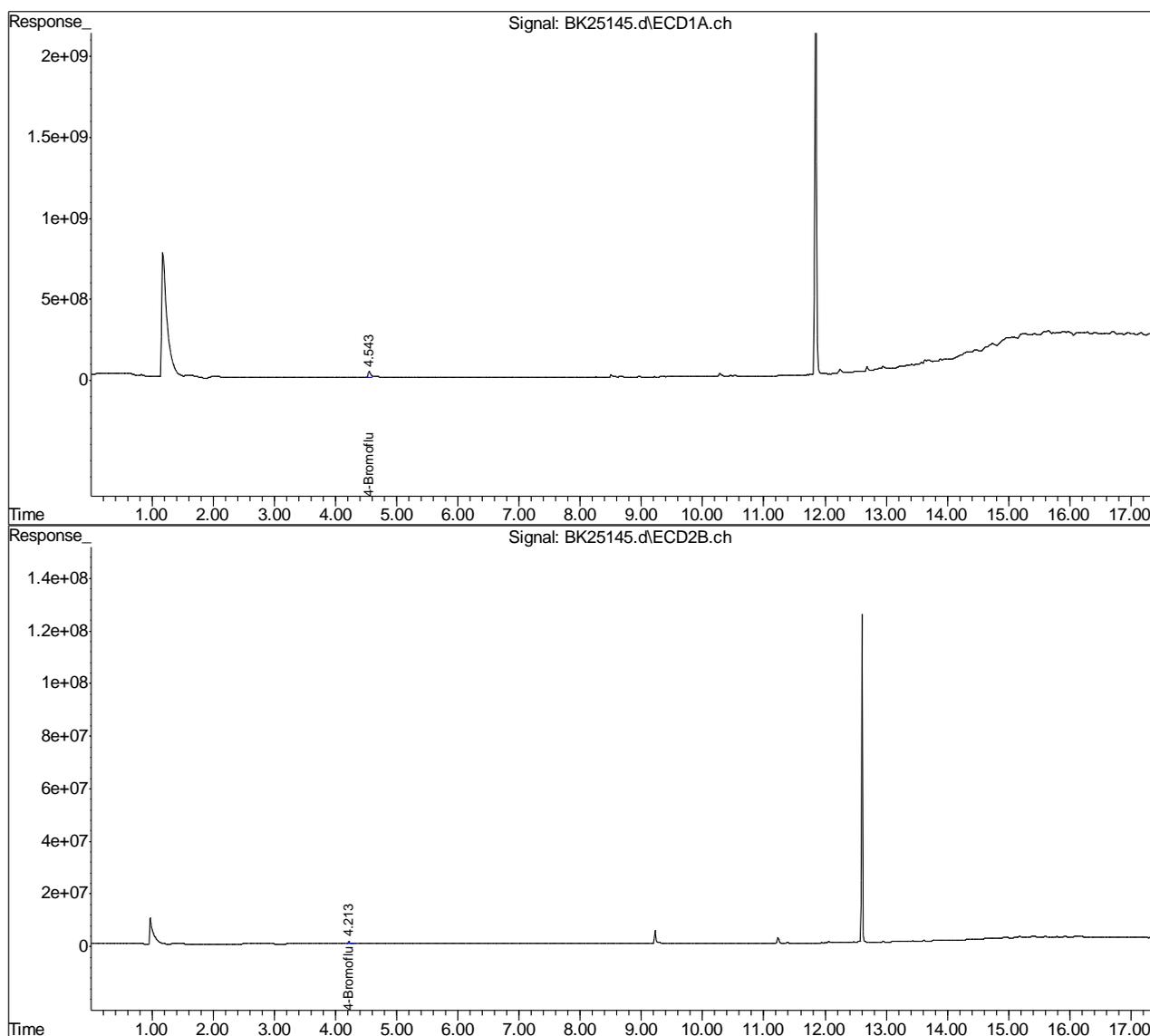
12.1.6
12

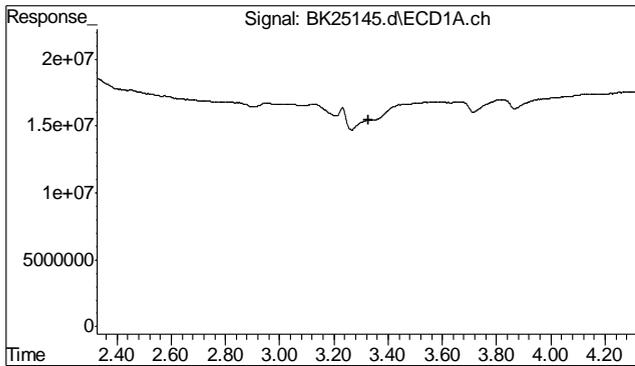
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
Data File : BK25145.d
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
Acq On : 24 May 2013 11:23 pm
Operator : andrip
Sample : jb37539-6,op33302
Misc : op33302,gbk874,30.37,,,50,,s
ALS Vial : 30 Sample Multiplier: 1

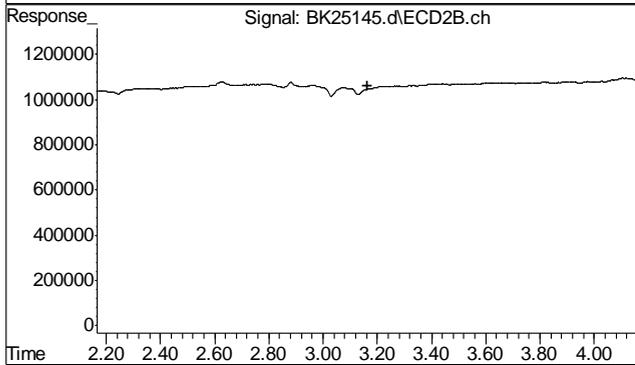
Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: May 28 10:05:47 2013
Quant Method : C:\msdchem\1\METHODS\EDS130524.M
Quant Title : EDB /Rtx35/DB1701
QLast Update : Tue May 28 07:48:27 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

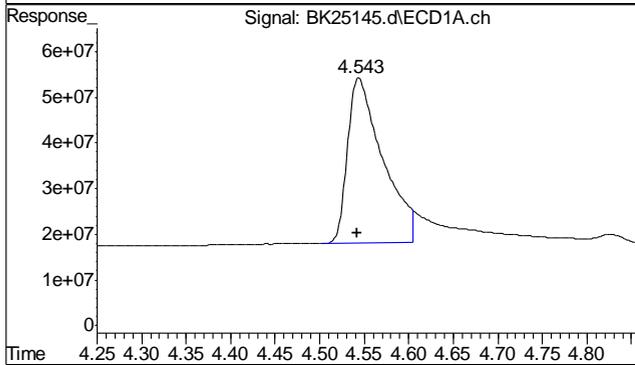




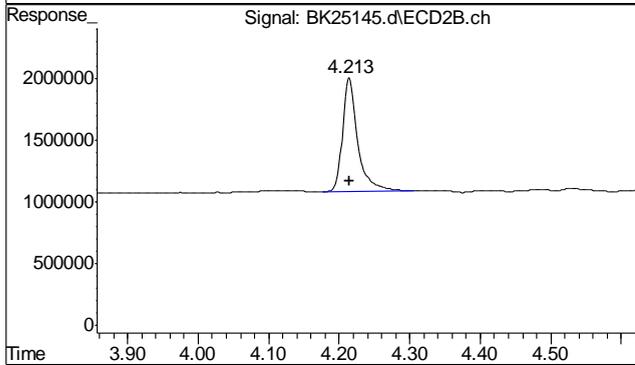
#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.326 min
 Response: 0
 Conc: N.D.



#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.165 min
 Response: 0
 Conc: N.D.

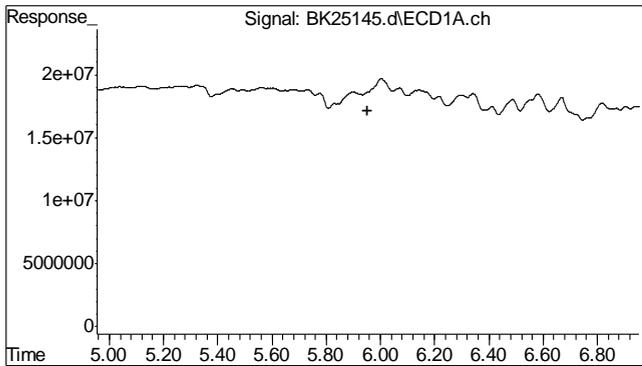


#2 4-Bromofluorobenzene
 R.T.: 4.543 min
 Delta R.T.: 0.001 min
 Response: 989375359
 Conc: 79.20 ug/L m

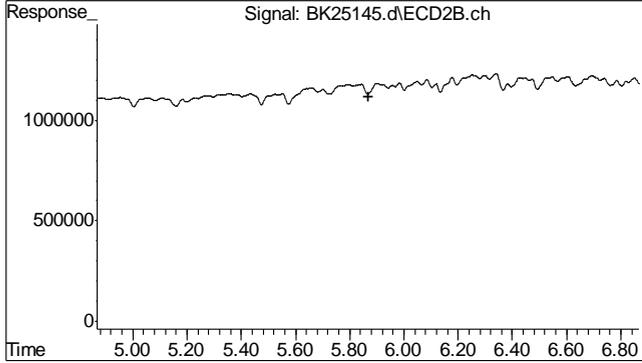


#2 4-Bromofluorobenzene
 R.T.: 4.213 min
 Delta R.T.: 0.000 min
 Response: 13850935
 Conc: 68.28 ug/L m

12.1.6 12



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.954 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane
R.T.: 0.000 min
Exp R.T. : 5.868 min
Response: 0
Conc: N.D.

12.1.6
12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
 Data File : BK25136.d
 Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
 Acq On : 24 May 2013 7:48 pm
 Operator : andrip
 Sample : op33302-mb
 Misc : op33302,gbk874,30.35,,,50,,,s
 ALS Vial : 21 Sample Multiplier: 1

Integration File signal 1: events.e
 Integration File signal 2: events2.e
 Quant Time: May 28 10:03:51 2013
 Quant Method : C:\msdchem\1\METHODS\EDS130524.M
 Quant Title : EDB /Rtx35/DB1701
 QLast Update : Tue May 28 07:48:27 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L

System Monitoring Compounds						
2) s 4-Bromofl...	4.543	4.214	879.9E6	11899040	70.439m	58.656m
Spiked Amount	50.000	Range 26 - 158	Recovery	=	140.88%	117.31%
Target Compounds						
1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	N.D.

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

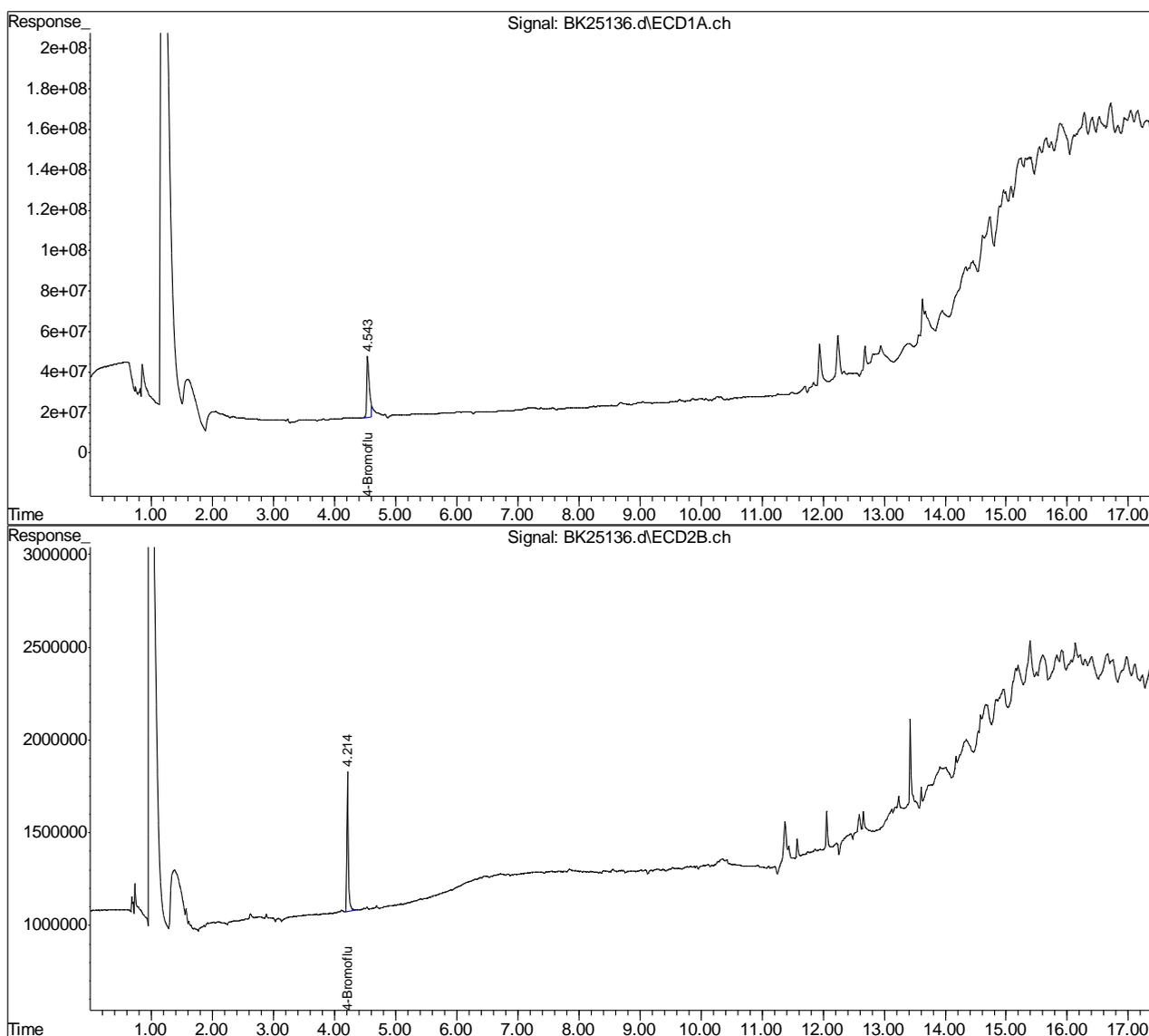
12.2.1
12

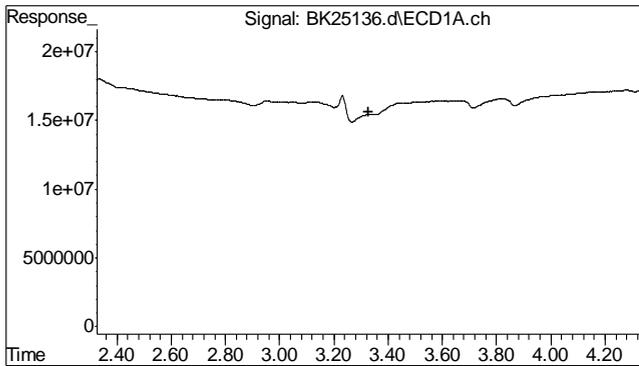
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BK130524\
Data File : BK25136.d
Signal(s) : Signal #1: ECD1A.ch Signal #2: ECD2B.ch
Acq On : 24 May 2013 7:48 pm
Operator : andrip
Sample : op33302-mb
Misc : op33302,gbk874,30.35,,,50,,s
ALS Vial : 21 Sample Multiplier: 1

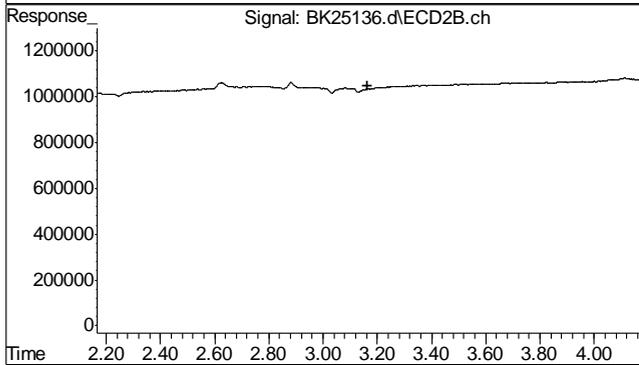
Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: May 28 10:03:51 2013
Quant Method : C:\msdchem\1\METHODS\EDS130524.M
Quant Title : EDB /Rtx35/DB1701
QLast Update : Tue May 28 07:48:27 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

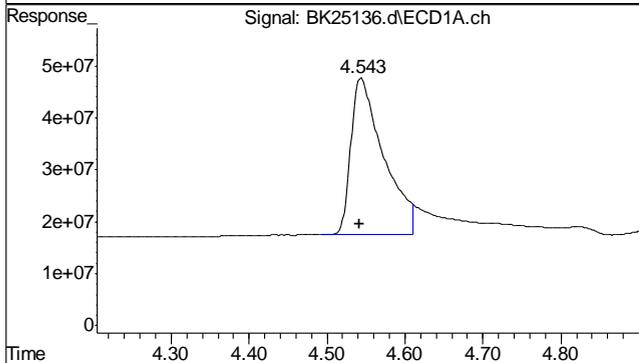




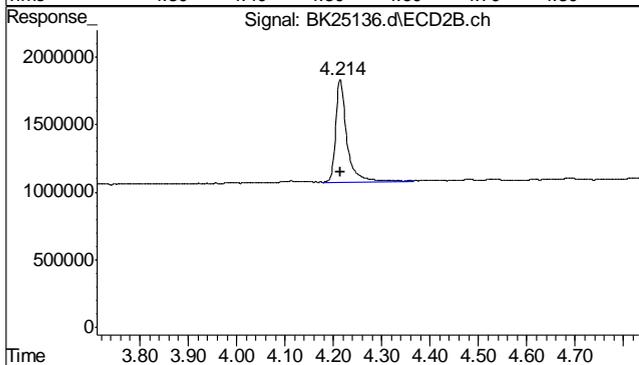
#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.326 min
 Response: 0
 Conc: N.D.



#1 1,2-Dibromoethane
 R.T.: 0.000 min
 Exp R.T.: 3.165 min
 Response: 0
 Conc: N.D.

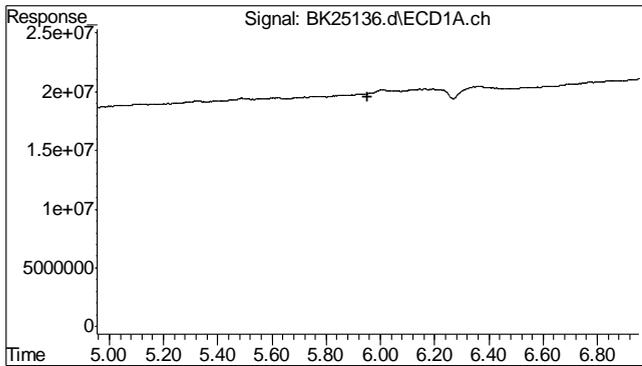


#2 4-Bromofluorobenzene
 R.T.: 4.543 min
 Delta R.T.: 0.000 min
 Response: 879882652
 Conc: 70.44 ug/L m



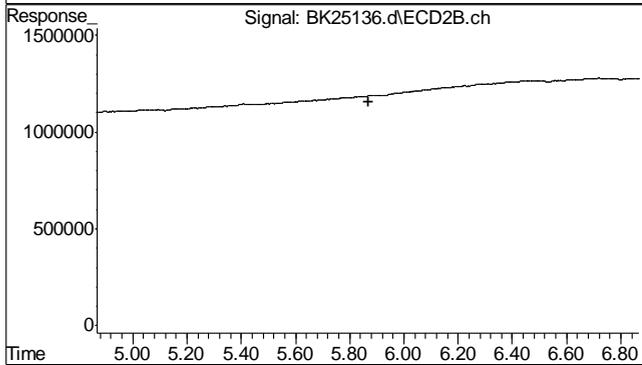
#2 4-Bromofluorobenzene
 R.T.: 4.214 min
 Delta R.T.: 0.000 min
 Response: 11899040
 Conc: 58.66 ug/L m

12.2.1
 12



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
 Exp R.T. : 5.954 min
 Response: 0
 Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
 Exp R.T. : 5.868 min
 Response: 0
 Conc: N.D.

12.2.1
12

Metals Analysis

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
Analyst: EAL Run ID: MA15678
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:15	MA15678-STD1	1		STD1
17:20	MA15678-STD2	1		STD2
17:24	MA15678-STD3	1		STD3
17:28	MA15678-STD4	1		STD4
17:33	MA15678-ICV1	1		
17:38	MA15678-ICB1	1		
17:42	MA15678-CCV1	1		
17:46	MA15678-CCB1	1		
17:51	ZZZZZ	1		DNR: SEE RERUN FOR CRIA.
18:00	MA15678-CRIA1	1		
18:11	MA15678-ICSA1	1		
18:15	MA15678-ICSAB1	1		
18:20	MP21077-B1	1		
18:24	MP21077-MB1	1		
18:28	MP21077-S1	1		MS OUT FOR SB, NEED PS.
18:32	MP21077-S2	1		
18:37	MC20997-9	1		(sample used for QC only; not part of login JB37539)
18:41	MP21077-SD1	5		
18:46	MA15678-CCV2	1		
18:50	MA15678-CCB2	1		
18:54	MP21077-B2	1		
18:58	MP21077-LC1	1		
19:02	ZZZZZ	1		
19:07	ZZZZZ	1		
19:11	ZZZZZ	1		
19:16	ZZZZZ	1		
19:20	ZZZZZ	1		
19:25	ZZZZZ	1		
19:29	ZZZZZ	1		
19:33	ZZZZZ	1		
19:37	MA15678-CCV3	1		
19:42	MA15678-CCB3	1		
19:46	ZZZZZ	1		

13.1
13

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
Analyst: EAL Run ID: MA15678
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
19:50	ZZZZZZ	1		
19:55	ZZZZZZ	1		
20:00	ZZZZZZ	1		
20:04	ZZZZZZ	1		
20:08	ZZZZZZ	1		
20:13	ZZZZZZ	1		
20:17	ZZZZZZ	1		
20:21	ZZZZZZ	1		
20:26	ZZZZZZ	1		
20:30	MA15678-CCV4	1		
20:34	MA15678-CCB4	1		
20:39	ZZZZZZ	1		
20:43	MP21078-B1	1		
20:47	MP21078-MB1	1		
20:51	MP21078-S1	1		MS OUT FOR AS AND PB, NEED PS; ISTD Y3710 FAILURE.
20:56	MP21078-S2	1		ISTD Y3710 FAILURE.
21:00	MC21269-1	1		(sample used for QC only; not part of login JB37539)
21:05	MP21078-SD1	5		
21:09	MP21078-LC1	1		
21:13	JB37539-1	1		
21:18	JB37539-2	1		
21:22	MA15678-CCV5	1		
21:26	MA15678-CCB5	1		
21:31	JB37539-3	1		
21:35	JB37539-4	1		
21:40	JB37539-5	1		
21:44	JB37539-6	1		
----->	Last reportable sample/prep for job JB37539			
21:49	ZZZZZZ	1		
21:53	ZZZZZZ	1		
21:58	ZZZZZZ	1		
22:02	ZZZZZZ	1		
22:07	ZZZZZZ	1		
22:11	ZZZZZZ	1		

13.1
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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37539

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP

Date Analyzed: 05/29/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15678

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
22:16	MA15678-CCV6	1		
22:20	MA15678-CCB6	1		
22:24	ZZZZZZ	1		
22:29	ZZZZZZ	1		
22:33	ZZZZZZ	1		
22:38	ZZZZZZ	1		
22:42	ZZZZZZ	1		
22:47	ZZZZZZ	1		
22:51	ZZZZZZ	1		
22:55	MA15678-CCV7	1		
22:59	MA15678-CCB7	1		
23:04	MA15678-CRIA2	1		
23:08	MA15678-ICSA2	1		
23:13	MA15678-ICSAB2	1		
23:17	MA15678-CCV8	1		
23:21	MA15678-CCB8	1		

-----> Last reportable CCB for job JB37539
Refer to raw data for calibration curve and standards.

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INTERNAL STANDARD SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
 Analyst: EAL Run ID: MA15678
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
17:15	MA15678-STD1	2224 R	59071 R	13508 R
17:20	MA15678-STD2	2217	58698	13389
17:24	MA15678-STD3			13532
17:28	MA15678-STD4	2269	58842	13551
17:33	MA15678-ICV1	2248	58107	13537
17:38	MA15678-ICB1	2253	58839	13458
17:42	MA15678-CCV1	2264	58581	13549
17:46	MA15678-CCB1	2265	58777	13482
17:51	ZZZZZ	2258	58523	13510
18:00	MA15678-CRIA1	2267	59050	13521
18:11	MA15678-ICSA1	2068	54940	13099
18:15	MA15678-ICSAB1	2078	55178	13179
18:20	MP21077-B1	2234	58335	13519
18:24	MP21077-MB1	2263	59533	13501
18:28	MP21077-S1	2505	66542	15311
18:32	MP21077-S2	2511	66211	15328
18:37	MC20997-9	2540	65406	15375
18:41	MP21077-SD1	2336	59806	13953
18:46	MA15678-CCV2	2281	57914	13429
18:50	MA15678-CCB2	2257	58024	13463
18:54	MP21077-B2	2248	58002	13512
18:58	MP21077-LC1	2442	62770	14775
19:02	ZZZZZ	2365	60635	14183
19:07	ZZZZZ	2313	59972	14396
19:11	ZZZZZ	2435	64306	15177
19:16	ZZZZZ	2530	64778	15232
19:20	ZZZZZ	2537	65004	15420
19:25	ZZZZZ	2427	61206	14508
19:29	ZZZZZ	2626	67844	15802
19:33	ZZZZZ	2464	61785	14717
19:37	MA15678-CCV3	2275	58022	13701
19:42	MA15678-CCB3	2271	58281	13473
19:46	ZZZZZ	2561	65960	15472

13.1.1
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INTERNAL STANDARD SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
 Analyst: EAL Run ID: MA15678
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
19:50	ZZZZZZ	2568	65427	15614
19:55	ZZZZZZ	2594	66873	15781
20:00	ZZZZZZ	2565	66046	15729
20:04	ZZZZZZ	2456	62535	14963
20:08	ZZZZZZ	2398	60983	14459
20:13	ZZZZZZ	2410	61285	14691
20:17	ZZZZZZ	2864	74447	17885 !a
20:21	ZZZZZZ	2981 !a	78175 !a	18847 !a
20:26	ZZZZZZ	2930 !a	76662	18397 !a
20:30	MA15678-CCV4	2272	58185	13779
20:34	MA15678-CCB4	2272	58756	13874
20:39	ZZZZZZ	2518	62127	15967
20:43	MP21078-B1	2245	58133	13886
20:47	MP21078-MB1	2280	59422	13869
20:51	MP21078-S1	2822	74962	17921 !a
20:56	MP21078-S2	2861	75440	18103 !a
21:00	MC21269-1	2887	75734	18022 !a
21:05	MP21078-SD1	2394	62197	14698
21:09	MP21078-LC1	2436	62546	15117
21:13	JB37539-1	2456	63676	15303
21:18	JB37539-2	2411	62310	14940
21:22	MA15678-CCV5	2256	57816	13870
21:26	MA15678-CCB5	2264	58198	13828
21:31	JB37539-3	2481	64674	15664
21:35	JB37539-4	2529	64699	15543
21:40	JB37539-5	2327	61854	14890
21:44	JB37539-6	2569	65892	15923
21:49	ZZZZZZ	2821	74928	17979 !a
21:53	ZZZZZZ	2496	67093	16339
21:58	ZZZZZZ	2830	74947	18131 !a
22:02	ZZZZZZ	2781	73768	17720 !a
22:07	ZZZZZZ	2817	74633	18113 !a
22:11	ZZZZZZ	2857	76105	18332 !a

13.1.1
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INTERNAL STANDARD SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
 Analyst: EAL Run ID: MA15678
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
22:16	MA15678-CCV6	2233	59018	14051
22:20	MA15678-CCB6	2233	58945	14018
22:24	ZZZZZZ	2693	73434	17737 !a
22:29	ZZZZZZ	2556	69958	16936
22:33	ZZZZZZ	2548	69662	16710
22:38	ZZZZZZ	2555	70587	17182
22:42	ZZZZZZ	2917 !a	79143 !a	18968 !a
22:47	ZZZZZZ	2302	59269	14474
22:51	ZZZZZZ	2399	62940	15192
22:55	MA15678-CCV7	2217	58888	14046
22:59	MA15678-CCB7	2225	59495	13827
23:04	MA15678-CRIA2	2231	58423	13814
23:08	MA15678-ICSA2	2058	54840	13462
23:13	MA15678-ICSAB2	2067	55412	13461
23:17	MA15678-CCV8	2249	58720	13808
23:21	MA15678-CCB8	2266	59280	13667

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %

(a) No element reported by this internal standard.

13.1.1
13

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
 QC Limits: result < RL Run ID: MA15678 Units: ug/l

Metal	RL	IDL	Time:	17:38	17:46	18:50	19:42			
			Sample ID:	ICB1	CCB1	CCB2	CCB3	raw	final	
Aluminum	200	12								
Antimony	10	1.1	anr							
Arsenic	10	1.7	anr							
Barium	50	.32	anr							
Beryllium	4.0	.1	anr							
Boron	100	1.1	anr							
Cadmium	4.0	.25	anr							
Calcium	5000	21								
Chromium	10	.48	anr							
Cobalt	50	.29	anr							
Copper	25	.93	anr							
Gold	50	1.5								
Iron	100	3.5								
Lead	10	1.2	0.50	<10	-0.20	<10	-0.10	<10	-0.20	<10
Magnesium	5000	30								
Manganese	15	.16	anr							
Molybdenum	100	.31								
Nickel	40	.45	anr							
Palladium	50	2.2								
Platinum	50	6.4								
Potassium	5000	54								
Selenium	10	1.7	anr							
Silicon	100	2								
Silver	5.0	.81	anr							
Sodium	5000	16								
Strontium	10	.12								
Thallium	10	1.2	anr							
Tin	100	.87	anr							
Titanium	50	.66	anr							
Tungsten	100	9.3								
Vanadium	10	.82	anr							
Zinc	20	.45	anr							
Zirconium	50	.45								

(*) Outside of QC limits

13.1.2
13

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
 QC Limits: result < RL Run ID: MA15678 Units: ug/l

Metal	RL	IDL	20:34	21:26		22:20		22:59		
			CCB4	raw	final	raw	final	raw	final	raw
Aluminum	200	12								
Antimony	10	1.1	anr							
Arsenic	10	1.7	anr							
Barium	50	.32	anr							
Beryllium	4.0	.1	anr							
Boron	100	1.1	anr							
Cadmium	4.0	.25	anr							
Calcium	5000	21								
Chromium	10	.48	anr							
Cobalt	50	.29	anr							
Copper	25	.93	anr							
Gold	50	1.5								
Iron	100	3.5								
Lead	10	1.2	0.0	<10	0.30	<10	-0.50	<10	1.4	<10
Magnesium	5000	30								
Manganese	15	.16	anr							
Molybdenum	100	.31								
Nickel	40	.45	anr							
Palladium	50	2.2								
Platinum	50	6.4								
Potassium	5000	54								
Selenium	10	1.7	anr							
Silicon	100	2								
Silver	5.0	.81	anr							
Sodium	5000	16								
Strontium	10	.12								
Thallium	10	1.2	anr							
Tin	100	.87	anr							
Titanium	50	.66	anr							
Tungsten	100	9.3								
Vanadium	10	.82	anr							
Zinc	20	.45	anr							
Zirconium	50	.45								

(*) Outside of QC limits

13.12
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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
 QC Limits: result < RL Run ID: MA15678 Units: ug/l

Metal	RL	IDL	23:21 CCB8 raw	final
Aluminum	200	12		
Antimony	10	1.1	anr	
Arsenic	10	1.7	anr	
Barium	50	.32	anr	
Beryllium	4.0	.1	anr	
Boron	100	1.1	anr	
Cadmium	4.0	.25	anr	
Calcium	5000	21		
Chromium	10	.48	anr	
Cobalt	50	.29	anr	
Copper	25	.93	anr	
Gold	50	1.5		
Iron	100	3.5		
Lead	10	1.2	0.90	<10
Magnesium	5000	30		
Manganese	15	.16	anr	
Molybdenum	100	.31		
Nickel	40	.45	anr	
Palladium	50	2.2		
Platinum	50	6.4		
Potassium	5000	54		
Selenium	10	1.7	anr	
Silicon	100	2		
Silver	5.0	.81	anr	
Sodium	5000	16		
Strontium	10	.12		
Thallium	10	1.2	anr	
Tin	100	.87	anr	
Titanium	50	.66	anr	
Tungsten	100	9.3		
Vanadium	10	.82	anr	
Zinc	20	.45	anr	
Zirconium	50	.45		

(*) Outside of QC limits

13.12
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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15678 Units: ug/l

Metal	Sample ID: ICV	17:33		CCV	17:42		CCV	18:46	
		ICV1	Results % Rec		CCV1	Results % Rec		CCV2	Results % Rec
Aluminum									
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Boron	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Gold									
Iron									
Lead	3000	2950	98.3	2000	1930	96.5	2000	1910	95.5
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Thallium	anr								
Tin	anr								
Titanium	anr								
Tungsten									
Vanadium	anr								
Zinc	anr								
Zirconium									

(*) Outside of QC limits

13.13 13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15678 Units: ug/l

Metal	Sample ID: CCV	19:37		CCV	20:30		CCV	21:22	
		CCV3	Results		CCV4	Results		CCV5	Results
	True		% Rec	True		% Rec	True		% Rec
Aluminum									
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Boron	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Gold									
Iron									
Lead	2000	1920	96.0	2000	1920	96.0	2000	1920	96.0
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Thallium	anr								
Tin	anr								
Titanium	anr								
Tungsten									
Vanadium	anr								
Zinc	anr								
Zirconium									

(*) Outside of QC limits

13.13
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15678 Units: ug/l

Metal	Sample ID: CCV	Time: 22:16		CCV	Time: 22:55		CCV	Time: 23:17	
		CCV6	Results		CCV7	Results		CCV8	Results
	True		% Rec	True		% Rec	True		% Rec
Aluminum									
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Boron	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Gold									
Iron									
Lead	2000	1950	97.5	2000	1940	97.0	2000	1900	95.0
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Thallium	anr								
Tin	anr								
Titanium	anr								
Tungsten									
Vanadium	anr								
Zinc	anr								
Zirconium									

(*) Outside of QC limits

13.13
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA15678 Units: ug/l

Time:	18:00	23:04				
Sample ID:	CRI	CRIA	CRI1	% Rec	CRI2	% Rec
Metal	True	True	Results		Results	
Aluminum	200	200				
Antimony	6.0	10	anr			
Arsenic	4.0	10	anr			
Barium	50	50	anr			
Beryllium	4.0	4.0	anr			
Boron	100	100	anr			
Cadmium	4.0	4.0	anr			
Calcium	5000	5000				
Chromium	10	10	anr			
Cobalt	50	50	anr			
Copper	25	25	anr			
Gold	50	50				
Iron	100	100				
Lead	5.0	10	9.4	94.0	9.8	98.0
Magnesium	5000	5000				
Manganese	15	15	anr			
Molybdenum	100	100				
Nickel	40	40	anr			
Palladium	50	50				
Platinum	50	50				
Potassium	5000	5000				
Selenium	10	10	anr			
Silicon	100	100				
Silver	5.0	5.0	anr			
Sodium	5000	5000				
Strontium	10	10				
Thallium	5.0	10	anr			
Tin	100	100	anr			
Titanium	50	50	anr			
Tungsten	100	100				
Vanadium	10	10	anr			
Zinc	20	20	anr			
Zirconium	50	50				

(*) Outside of QC limits

13.14
13

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA15678 Units: ug/l

Time:			18:11			18:15			23:08			23:13
Sample ID:	ICSA	ICSAB	ICSAL	% Rec	ICSAB1	% Rec	ICSAB2	% Rec	ICSAB2	% Rec		
Metal	True	True	Results		Results		Results		Results			
Aluminum	500000	500000	517000	103.4	521000	104.2	515000	103.0	518000	103.6		
Antimony		2000	0.90		2050	102.5	0.30		2050	102.5		
Arsenic		2000	2.1		2060	103.0	2.6		2030	101.5		
Barium		500	0.0		510	102.0	-0.30		502	100.4		
Beryllium		500	0.10		480	96.0	0.10		470	94.0		
Boron		1000	6.0		1010	101.0	5.0		1010	101.0		
Cadmium		1000	-0.10		1030	103.0	0.0		1020	102.0		
Calcium	500000	500000	470000	94.0	475000	95.0	460000	92.0	460000	92.0		
Chromium		500	-1.0		497	99.4	-1.1		485	97.0		
Cobalt		500	-0.50		482	96.4	-0.40		476	95.2		
Copper		500	-0.10		522	104.4	0.40		516	103.2		
Gold		500	1.5		500	100.0	-0.10		484	96.8		
Iron	200000	200000	193000	96.5	192000	96.0	190000	95.0	188000	94.0		
Lead		1000	2.6		909	90.9	2.4		896	89.6		
Magnesium	500000	500000	504000	100.8	504000	100.8	490000	98.0	488000	97.6		
Manganese		500	0.90		494	98.8	1.0		483	96.6		
Molybdenum		1000	-1.0		962	96.2	-0.50		956	95.6		
Nickel		1000	-1.4		885	88.5	-1.7		875	87.5		
Palladium		500	-42		492	98.4	-43		485	97.0		
Platinum		500	-20		484	96.8	-17		470	94.0		
Potassium			90.9		87.1		232		214			
Selenium		2000	0.60		1980	99.0	-1.1		1950	97.5		
Silicon		2000	44.6		2200	110.0	42.4		2180	109.0		
Silver		1000	0.10		1050	105.0	0.20		1040	104.0		
Sodium			90.4		71.1		91.5		77.2			
Strontium		1000	1.0		988	98.8	1.3		971	97.1		
Thallium		2000	0.60		1890	94.5	0.40		1870	93.5		
Tin		1000	0.10		974	97.4	-0.60		965	96.5		
Titanium		500	9.6		519	103.8	9.7		510	102.0		
Tungsten		2000	-42		1850	92.5	-44		1820	91.0		
Vanadium		500	0.30		512	102.4	-0.10		504	100.8		
Zinc		1000	0.10		914	91.4	0.0		891	89.1		
Zirconium		500	0.60		465	93.0	0.60		447	89.4		

(*) Outside of QC limits

13.15 13

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB052913M2.ICP Date Analyzed: 05/29/13 Methods: SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA15678 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37539

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP

Date Analyzed: 05/30/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15682

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:40	MA15682-STD1	1		STD1
10:45	MA15682-STD2	1		STD2
10:49	MA15682-STD3	1		STD3
10:53	MA15682-STD4	1		STD4
10:58	MA15682-ICV1	1		
11:03	MA15682-ICB1	1		
11:08	MA15682-CCV1	1		
11:13	MA15682-CCB1	1		
11:22	MA15682-CRIA1	1		
11:27	MA15682-ICSA1	1		
11:31	MA15682-ICSAB1	1		
11:35	ZZZZZ	1		
11:44	ZZZZZ	2		
11:48	ZZZZZ	2		
11:52	ZZZZZ	2		
11:57	MP21077-PS1	1		
12:02	ZZZZZ	2		
12:08	MP21078-PS1	1		
12:12	MA15682-CCV2	1		
12:17	MA15682-CCB2	1		
12:22	MA15682-CRIA2	1		
12:26	ZZZZZ	1		DNR: SEE RERUN FOR CRI.
12:32	MA15682-CRI1	1		
12:37	MP21082-B1	1		
12:42	MP21082-MB1	1		
12:46	MP21082-S1	1		
12:50	MP21082-S2	1		
12:54	MC21263-1	1		(sample used for QC only; not part of login JB37539)
12:59	MP21082-SD1	5		
13:03	MP21082-B2	1		
13:07	MA15682-CCV3	1		
13:11	MA15682-CCB3	1		
13:16	MP21082-MB2	1		

----->

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37539

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP

Date Analyzed: 05/30/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15682

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:20	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:29	ZZZZZZ	1		
13:33	ZZZZZZ	1		
13:37	ZZZZZZ	1		
13:42	ZZZZZZ	1		
13:46	ZZZZZZ	1		
13:50	ZZZZZZ	1		
13:55	ZZZZZZ	1		
13:59	MA15682-CCV4	1		
14:06	MA15682-CCB4	1		
14:11	ZZZZZZ	1		
14:15	ZZZZZZ	1		
14:19	MA15682-CRI2	1		
14:23	MA15682-CRIB1	1		
14:28	MP21083-B1	1		
14:32	MP21083-MB1	1		
14:37	MP21083-S1	1		
14:41	MP21083-S2	1		
14:45	MC21154-10	1		(sample used for QC only; not part of login JB37539)
14:50	MP21083-SD1	5		
14:54	MA15682-CCV5	1		
15:00	MA15682-CCB5	1		
15:05	MP21083-MB2	1		
15:09	MP21083-LB1	1		
15:14	ZZZZZZ	1		
15:18	ZZZZZZ	1		
15:22	ZZZZZZ	1		
15:27	MA15682-CRIB2	1		
15:31	MA15682-ICSA2	1		
15:36	MA15682-ICSAB2	1		
15:40	MA15682-CCV6	1		
15:45	MA15682-CCB6	1		
----->	Last reportable CCB for job JB37539 Refer to raw data for calibration curve and standards.			

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INTERNAL STANDARD SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
 Analyst: EAL Run ID: MA15682
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
10:40	MA15682-STD1	2411 R	61349 R	15307 R
10:45	MA15682-STD2	2423	60081	13782
10:49	MA15682-STD3			13895
10:53	MA15682-STD4	2463	59560	13565
10:58	MA15682-ICV1	2434	58901	13691
11:03	MA15682-ICB1	2437	59420	13870
11:08	MA15682-CCV1	2441	58999	13839
11:13	MA15682-CCB1	2436	59487	13820
11:22	MA15682-CRIA1	2458	59407	13758
11:27	MA15682-ICSA1	2230	55178	13318
11:31	MA15682-ICSAB1	2242	55145	13423
11:35	ZZZZZ	2682	65279	15523
11:44	ZZZZZ	2758	66755	15976
11:48	ZZZZZ	2832	68999	16315
11:52	ZZZZZ	2769	67976	15917
11:57	MP21077-PS1	2703	66803	15617
12:02	ZZZZZ	2799	69288	16003
12:08	MP21078-PS1	3062	75904	17775
12:12	MA15682-CCV2	2426	59164	13612
12:17	MA15682-CCB2	2435	59442	13812
12:22	MA15682-CRIA2	2408	59175	13783
12:26	ZZZZZ	2441	59652	13795
12:32	MA15682-CRI1	2438	59456	13886
12:37	MP21082-B1	2383	59131	13713
12:42	MP21082-MB1	2407	59407	13840
12:46	MP21082-S1	2376	59075	13693
12:50	MP21082-S2	2378	58666	13818
12:54	MC21263-1	2393	59134	13711
12:59	MP21082-SD1	2431	59641	13865
13:03	MP21082-B2	2421	58819	13929
13:07	MA15682-CCV3	2434	58970	13809
13:11	MA15682-CCB3	2434	59566	13702
13:16	MP21082-MB2	2427	59261	13870

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INTERNAL STANDARD SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
 Analyst: EAL Run ID: MA15682
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
13:20	ZZZZZZ	2425	59071	13768
13:24	ZZZZZZ	2424	59705	13839
13:29	ZZZZZZ	2439	59808	13913
13:33	ZZZZZZ	2387	59404	13912
13:37	ZZZZZZ	2431	59596	13702
13:42	ZZZZZZ	2428	59525	13878
13:46	ZZZZZZ	2440	59272	13946
13:50	ZZZZZZ	2431	59391	14062
13:55	ZZZZZZ	2442	59297	13858
13:59	MA15682-CCV4	2449	59077	13809
14:06	MA15682-CCB4	2452	59678	13926
14:11	ZZZZZZ	2413	59719	13983
14:15	ZZZZZZ	2470	61377	14235
14:19	MA15682-CRI2	2444	59370	13825
14:23	MA15682-CRIB1	2419	59170	13680
14:28	MP21083-B1	2324	59477	13904
14:32	MP21083-MB1	2431	59583	13917
14:37	MP21083-S1	2204	58477	13709
14:41	MP21083-S2	2206	58321	13745
14:45	MC21154-10	2196	58308	13548
14:50	MP21083-SD1	2361	59882	13721
14:54	MA15682-CCV5	2432	59627	13910
15:00	MA15682-CCB5	2439	59274	13953
15:05	MP21083-MB2	2419	59334	13694
15:09	MP21083-LB1	2339	59739	14002
15:14	ZZZZZZ	2428	59980	14152
15:18	ZZZZZZ	2387	59471	13768
15:22	ZZZZZZ	2443	60801	14278
15:27	MA15682-CRIB2	2463	60335	14210
15:31	MA15682-ICSA2	2233	55626	13551
15:36	MA15682-ICSAB2	2255	56168	13569
15:40	MA15682-CCV6	2432	59332	14065
15:45	MA15682-CCB6	2430	60259	13871

R = Reference for ISTD limits. ! = Outside limits.

INTERNAL STANDARD SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
Analyst: EAL Run ID: MA15682
Parameters: Pb

Sample				
Time	Description	Istd#1	Istd#2	Istd#3

LEGEND:

<u>Istd#</u>	<u>Parameter</u>	<u>Limits</u>
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
 QC Limits: result < RL Run ID: MA15682 Units: ug/l

Time: Sample ID:	11:03 ICB1	11:13 CCB1	12:17 CCB2	13:11 CCB3						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	12								
Antimony	6.0	1.1	anr							
Arsenic	4.0	1.7	anr							
Barium	50	.32	anr							
Beryllium	4.0	.1	anr							
Boron	100	1.1	anr							
Cadmium	4.0	.25	anr							
Calcium	5000	21								
Chromium	10	.48	anr							
Cobalt	50	.29	anr							
Copper	25	.93	anr							
Gold	50	1.5								
Iron	100	3.5	anr							
Lead	5.0	1.2	-0.50	<5.0	1.0	<5.0	-0.50	<5.0	0.40	<5.0
Magnesium	5000	30								
Manganese	15	.16	anr							
Molybdenum	100	.31								
Nickel	40	.45	anr							
Palladium	50	2.2								
Platinum	50	6.4								
Potassium	5000	54								
Selenium	10	1.7	anr							
Silicon	100	2								
Silver	5.0	.81	anr							
Sodium	5000	16								
Strontium	10	.12								
Thallium	5.0	1.2	anr							
Tin	100	.87	anr							
Titanium	50	.66	anr							
Tungsten	100	9.3								
Vanadium	10	.82	anr							
Zinc	20	.45	anr							
Zirconium	50	.45								

(*) Outside of QC limits

13.22
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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
 QC Limits: result < RL Run ID: MA15682 Units: ug/l

Time:			14:06			15:00			15:45
Sample ID:	RL	IDL	CCB4	final	CCB5	final	CCB6	final	
Metal	RL	IDL	raw	final	raw	final	raw	final	
Aluminum	200	12							
Antimony	6.0	1.1	anr						
Arsenic	4.0	1.7	anr						
Barium	50	.32	anr						
Beryllium	4.0	.1	anr						
Boron	100	1.1	anr						
Cadmium	4.0	.25	anr						
Calcium	5000	21							
Chromium	10	.48	anr						
Cobalt	50	.29	anr						
Copper	25	.93	anr						
Gold	50	1.5							
Iron	100	3.5	anr						
Lead	5.0	1.2	-0.30	<5.0	0.70	<5.0	0.40	<5.0	
Magnesium	5000	30							
Manganese	15	.16	anr						
Molybdenum	100	.31							
Nickel	40	.45	anr						
Palladium	50	2.2							
Platinum	50	6.4							
Potassium	5000	54							
Selenium	10	1.7	anr						
Silicon	100	2							
Silver	5.0	.81	anr						
Sodium	5000	16							
Strontium	10	.12							
Thallium	5.0	1.2	anr						
Tin	100	.87	anr						
Titanium	50	.66	anr						
Tungsten	100	9.3							
Vanadium	10	.82	anr						
Zinc	20	.45	anr						
Zirconium	50	.45							

(*) Outside of QC limits

13.22
13

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15682 Units: ug/l

Metal	Sample ID: ICV	10:58		CCV	11:08		CCV	12:12	
		ICV1	Results % Rec		CCV1	Results % Rec		CCV2	Results % Rec
Aluminum									
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Boron	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Gold									
Iron	anr								
Lead	3000	3000	100.0	2000	1980	99.0	2000	2000	100.0
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Thallium	anr								
Tin	anr								
Titanium	anr								
Tungsten									
Vanadium	anr								
Zinc	anr								
Zirconium									

(*) Outside of QC limits

13.2.3
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15682 Units: ug/l

Metal	Sample ID: CCV	13:07		CCV	13:59		CCV	14:54	
		CCV3	Results % Rec		CCV4	Results % Rec		CCV5	Results % Rec
Aluminum									
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Boron	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Gold									
Iron	anr								
Lead	2000	1990	99.5	2000	1980	99.0	2000	1990	99.5
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Thallium	anr								
Tin	anr								
Titanium	anr								
Tungsten									
Vanadium	anr								
Zinc	anr								
Zirconium									

(*) Outside of QC limits

13.2.3
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15682 Units: ug/l

Time:	15:40		
Sample ID:	CCV	CCV6	
Metal	True	Results	% Rec

Aluminum			
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Boron	anr		
Cadmium	anr		
Calcium			
Chromium	anr		
Cobalt	anr		
Copper	anr		
Gold			
Iron	anr		
Lead	2000	1980	99.0
Magnesium			
Manganese	anr		
Molybdenum			
Nickel	anr		
Palladium			
Platinum			
Potassium			
Selenium	anr		
Silicon			
Silver	anr		
Sodium			
Strontium			
Thallium	anr		
Tin	anr		
Titanium	anr		
Tungsten			
Vanadium	anr		
Zinc	anr		
Zirconium			

(*) Outside of QC limits

13.2.3
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA15682 Units: ug/l

Time:			11:22			12:22			12:32			14:19
Sample ID:	CRI	CRIA	CRI1	% Rec	Results	% Rec						
Metal	True	True	Results	% Rec								
Aluminum	200	200										
Antimony	6.0	10	anr									
Arsenic	4.0	10	anr									
Barium	50	50	anr									
Beryllium	4.0	4.0	anr									
Boron	100	100	anr									
Cadmium	4.0	4.0	anr									
Calcium	5000	5000										
Chromium	10	10	anr									
Cobalt	50	50	anr									
Copper	25	25	anr									
Gold	50	50										
Iron	100	100	anr									
Lead	5.0	10	10.3	103.0	10.4	104.0	4.7	94.0	4.7	94.0		
Magnesium	5000	5000										
Manganese	15	15	anr									
Molybdenum	100	100										
Nickel	40	40	anr									
Palladium	50	50										
Platinum	50	50										
Potassium	5000	5000										
Selenium	10	10	anr									
Silicon	100	100										
Silver	5.0	5.0	anr									
Sodium	5000	5000										
Strontium	10	10										
Thallium	5.0	10	anr									
Tin	100	100	anr									
Titanium	50	50	anr									
Tungsten	100	100										
Vanadium	10	10	anr									
Zinc	20	20	anr									
Zirconium	50	50										

(*) Outside of QC limits

13.24
13

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
 QC Limits: 70 to 130 % Recovery Run ID: MA15682 Units: ug/l

Metal	True	Time:	14:23	15:27	
		Sample ID: CRIB	CRIB1	CRIB2	
		Results	% Rec	Results	% Rec
Aluminum	200				
Antimony	6.0				
Arsenic	10				
Barium	500				
Beryllium	4.0				
Boron	100				
Cadmium	4.0				
Calcium	5000				
Chromium	10				
Cobalt	50				
Copper	25				
Gold	50				
Iron	100				
Lead	10	10.0	100.0	9.8	98.0
Magnesium	5000				
Manganese	15				
Molybdenum	100				
Nickel	40				
Palladium	50				
Platinum	50				
Potassium	5000				
Selenium	25				
Silicon	100				
Silver	5.0				
Sodium	5000				
Strontium	10				
Thallium	5.0				
Tin	100				
Titanium	50				
Tungsten	100				
Vanadium	10				
Zinc	100				
Zirconium	50				

(*) Outside of QC limits

13.25
13

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA15682 Units: ug/l

Time:			11:27			11:31			15:31			15:36
Sample ID:	ICSA	ICSAB	ICSAL	% Rec	ICSAB1	% Rec	ICSA2	% Rec	ICSAB2	% Rec		
Metal	True	True	Results		Results		Results		Results			
Aluminum	500000	500000	529000	105.8	517000	103.4	511000	102.2	509000	101.8		
Antimony		2000	-1.3		2090	104.5	-0.60		2090	104.5		
Arsenic		2000	1.8		2100	105.0	2.5		2110	105.5		
Barium		500	0.20		511	102.2	0.30		511	102.2		
Beryllium		500	0.20		476	95.2	0.0		473	94.6		
Boron		1000	5.6		1020	102.0	5.6		1010	101.0		
Cadmium		1000	0.10		1050	105.0	0.0		1050	105.0		
Calcium	500000	500000	477000	95.4	470000	94.0	467000	93.4	461000	92.2		
Chromium		500	0.70		507	101.4	0.60		502	100.4		
Cobalt		500	-0.30		491	98.2	-0.50		492	98.4		
Copper		500	0.10		527	105.4	-0.60		526	105.2		
Gold		500	3.4		498	99.6	4.4		496	99.2		
Iron	200000	200000	193000	96.5	190000	95.0	189000	94.5	189000	94.5		
Lead		1000	2.1		930	93.0	1.9		926	92.6		
Magnesium	500000	500000	504000	100.8	501000	100.2	497000	99.4	501000	100.2		
Manganese		500	1.2		505	101.0	1.2		497	99.4		
Molybdenum		1000	-0.30		982	98.2	-0.40		986	98.6		
Nickel		1000	-1.7		899	89.9	-1.5		893	89.3		
Palladium		500	-44		493	98.6	-43		493	98.6		
Platinum		500	-23		485	97.0	-19		485	97.0		
Potassium			30.7		-17		73.3		38.4			
Selenium		2000	0.40		2010	100.5	-2.6		2020	101.0		
Silicon		2000	49.3		2220	111.0	50.1		2210	110.5		
Silver		1000	-0.40		1070	107.0	-1.1		1070	107.0		
Sodium			103		92.1		667		558			
Strontium		1000	1.1		987	98.7	1.1		991	99.1		
Thallium		2000	1.2		1930	96.5	0.80		1950	97.5		
Tin		1000	-0.20		985	98.5	-0.40		979	97.9		
Titanium		500	9.3		520	104.0	8.6		516	103.2		
Tungsten		2000	-29		1890	94.5	-36		1870	93.5		
Vanadium		500	0.10		514	102.8	0.50		512	102.4		
Zinc		1000	0.10		937	93.7	-0.30		932	93.2		
Zirconium		500	1.0		461	92.2	1.0		454	90.8		

(*) Outside of QC limits

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICESA and ICSAB Standards

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB053013M1.ICP Date Analyzed: 05/30/13 Methods: SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA15682 Units: ug/l

Time:
Sample ID:
Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 05/29/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	20	1.2	3.6		
Antimony	1.0	.11	.15		
Arsenic	1.0	.17	.21		
Barium	5.0	.032	.073		
Beryllium	0.40	.01	.024		
Boron	10	.11	.11		
Cadmium	0.40	.025	.042		
Calcium	500	2.1	6.3		
Chromium	1.0	.048	.095		
Cobalt	5.0	.029	.047		
Copper	2.5	.093	.56		
Gold	5.0	.15	.43		
Iron	10	.35	.87		
Lead	1.0	.12	.17	0.030	<1.0
Magnesium	500	3	5.1		
Manganese	1.5	.016	.04		
Molybdenum	10	.031	.07		
Nickel	4.0	.045	.044		
Palladium	5.0	.22	.64		
Platinum	5.0	.64	1.5		
Potassium	500	5.4	8.6		
Selenium	1.0	.17	.35		
Silicon	10	.2	3.3		
Silver	0.50	.081	.13		
Sodium	500	1.6	3.3		
Strontium	1.0	.012	.03		
Thallium	1.0	.12	.13		
Tin	10	.087	.14		
Titanium	5.0	.066	.14		
Tungsten	10	.93	.94		
Vanadium	1.0	.082	.13		
Zinc	2.0	.045	.16		
Zirconium	5.0	.045	.088		

13.3.1
13

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21078: JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

13.3.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 05/29/13

Metal	MC21269-1 Original MS	Spikelot MPICP	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron				
Lead	18.2	81.8	93.2	68.2 (a) 75-125
Magnesium				
Manganese				
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				
Zirconium				

13.32
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21078: JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity. Post spike is not within acceptable range.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 05/29/13

Metal	MC21269-1 Original MSD	SpikeLot MPICP	% Rec	MSD RPD	QC Limit
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron					
Lead	18.2	84.4	95.5	69.3 (a) 3.1	20
Magnesium					
Manganese					
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					
Zirconium					

13.32
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21078: JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike duplicate recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 05/29/13 05/29/13

Metal	BSP Result	Spikelot MPICP	% Rec	QC Limits	LCS Result	Spikelot MPLCS78	% Rec	QC Limits
Aluminum								
Antimony								
Arsenic	anr							
Barium								
Beryllium								
Boron								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Gold								
Iron								
Lead	94.3	100	94.3	80-120	84.7	91.7	92.4	82-118
Magnesium								
Manganese								
Molybdenum								
Nickel								
Palladium								
Platinum								
Potassium								
Selenium								
Silicon								
Silver								
Sodium								
Strontium								
Thallium								
Tin								
Titanium								
Tungsten								
Vanadium								
Zinc								
Zirconium								

13.3.3
13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21078: JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 05/29/13

Metal	MC21269-1 Original SDL 1:5	%DIF	QC Limits
-------	-------------------------------	------	--------------

Aluminum			
Antimony			
Arsenic	anr		
Barium			
Beryllium			
Boron			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Gold			
Iron			
Lead	190	243	27.5 (a) 0-10
Magnesium			
Manganese			
Molybdenum			
Nickel			
Palladium			
Platinum			
Potassium			
Selenium			
Silicon			
Silver			
Sodium			
Strontium			
Thallium			
Tin			
Titanium			
Tungsten			
Vanadium			
Zinc			
Zirconium			

13.3.4
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

Associated samples MP21078: JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

13.3.4
13

POST DIGESTATE SPIKE SUMMARY

Login Number: JB37539
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date:

05/29/13

Metal	Sample ml	Final ml	MC21269-1 Raw	PS Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Boron										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Gold										
Iron										
Lead	10	10.1	190.4	188.5149	483.8	.1	38	376.2376	78.5 (a)	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel										
Palladium										
Platinum										
Potassium										
Selenium										
Silicon										
Silver										
Sodium										
Strontium										
Thallium										
Tin										
Titanium										
Tungsten										
Vanadium										
Zinc										
Zirconium										

13.35
13

POST DIGESTATE SPIKE SUMMARY

Login Number: JB37539
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21078
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

Associated samples MP21078: JB37539-1, JB37539-2, JB37539-3, JB37539-4, JB37539-5, JB37539-6

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(**) Corr. sample result = Raw * (sample volume / final volume)

(anr) Analyte not requested

(a) Post-digestion spike recoveries outside of control limits indicate possible matrix interference.

General Chemistry

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Job Number: JB37539
Account: ALNJ Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: JB37539-1 Analyzed: 30-MAY-13 by HS Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_447_0-2'_52013

Wet Weight (Total)	39.328	g
Tare Weight	27.677	g
Dry Weight (Total)	37.747	g
Solids, Percent	86.4	%

Sample: JB37539-2 Analyzed: 30-MAY-13 by HS Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_447_8-10'_52013

Wet Weight (Total)	40.111	g
Tare Weight	22.002	g
Dry Weight (Total)	37.654	g
Solids, Percent	86.4	%

Sample: JB37539-3 Analyzed: 30-MAY-13 by HS Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_448_0-1_052013

Wet Weight (Total)	34.252	g
Tare Weight	24.813	g
Dry Weight (Total)	32.581	g
Solids, Percent	82.3	%

Sample: JB37539-4 Analyzed: 30-MAY-13 by HS Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_448_3-4_052013

Wet Weight (Total)	31.542	g
Tare Weight	18.857	g
Dry Weight (Total)	29.038	g
Solids, Percent	80.3	%

Sample: JB37539-5 Analyzed: 30-MAY-13 by HS Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_453_0-2_052013

Wet Weight (Total)	40.126	g
Tare Weight	24.607	g
Dry Weight (Total)	37.1	g
Solids, Percent	80.5	%

Sample: JB37539-6 Analyzed: 30-MAY-13 by HS Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_453_3-6_052013

Wet Weight (Total)	36.478	g
Tare Weight	19.86	g
Dry Weight (Total)	33.058	g
Solids, Percent	79.4	%

14.1
14

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Job Number: JB37539
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: JB37539-1 Analyzed: 30-MAY-13 by AMA Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_447_0-2'_52013

Wet Weight (Total)	39.328	g
Tare Weight	27.677	g
Dry Weight (Total)	37.747	g
Solids, Percent	86.4	%

Sample: JB37539-2 Analyzed: 30-MAY-13 by AMA Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_447_8-10'_52013

Wet Weight (Total)	40.111	g
Tare Weight	22.002	g
Dry Weight (Total)	37.654	g
Solids, Percent	86.4	%

Sample: JB37539-3 Analyzed: 30-MAY-13 by AMA Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_448_0-1_052013

Wet Weight (Total)	34.252	g
Tare Weight	24.813	g
Dry Weight (Total)	32.581	g
Solids, Percent	82.3	%

Sample: JB37539-4 Analyzed: 30-MAY-13 by AMA Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_448_3-4_052013

Wet Weight (Total)	31.542	g
Tare Weight	18.857	g
Dry Weight (Total)	29.038	g
Solids, Percent	80.3	%

Sample: JB37539-5 Analyzed: 30-MAY-13 by AMA Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_453_0-2_052013

Wet Weight (Total)	40.126	g
Tare Weight	24.607	g
Dry Weight (Total)	37.1	g
Solids, Percent	80.5	%

Sample: JB37539-6 Analyzed: 30-MAY-13 by AMA Method: SM21 2540 B MOD.
ClientID: AOI-5_MW_453_3-6_052013

Wet Weight (Total)	36.478	g
Tare Weight	19.86	g
Dry Weight (Total)	33.058	g
Solids, Percent	79.4	%

15.1
15